United States Department of Agriculture

Angeles National Forest

Los Padres National Forest

Piru Creek Wild and Scenic River

Comprehensive River Management Plan

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Forest Service

Los Padres National Forest
Angeles National Forest

Pacific Southwest Region

March 2025

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Background

This comprehensive river management plan (CRMP) establishes programmatic management direction for Piru Creek ("river"), a Wild and Scenic River (WSR) administered by the US Forest Service (Forest Service or FS). The river is located in Los Angeles County, California, and drains the rugged and remote Sespe Wilderness and flows into the Santa Clara River. Segments of the river are located within the Mojave/Los Angeles Gateway Ranger District of the Angeles National Forest, and the Mount Pinos Ranger District of the Los Padres National Forest. This CRMP has been developed to implement the direction of the Wild and Scenic Rivers Act of 1968 (Public Law 90-542) (Act) as amended in the 2009 Omnibus Public Land Management Act (Public Law 111-11 or "2009 Omnibus Act"). The 2009 Omnibus Act added 7.25 miles of Piru Creek to the National Wild and Scenic Rivers System. The Wild and Scenic Rivers Act established a system for preserving outstanding free-flowing rivers. Section 1(b) of the Act directs that:

> *"...certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreations, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."*

Role of a CRMP

The Act requires the agency responsible for administration of designated rivers to develop a CRMP for all rivers added to the National Wild and Scenic Rivers System, in order to protect and enhance their free-flowing condition, water quality, and outstandingly remarkable values (ORVs) -- collectively referred to as "river values" -- for the benefit and enjoyment of present and future generations. The Forest Service, under the direction of the Secretary of Agriculture, is the agency responsible for the administration of Piru Creek.

The purpose of this CRMP for the Piru Creek WSR is to protect and enhance river values by providing desired conditions, management direction, and monitoring plans that will be applied to the designated river corridor (the area within the proposed final boundary). The CRMP also addresses resource protection, development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of the Act.

This CRMP does not withdraw or invalidate valid existing rights within the corridor. Existing land uses in the Piru Creek WSR corridor are discussed in the "Land Uses and Access in River Corridor" section below.

The river and its boundaries are shown in Figure 1, below. The river's outstandingly remarkable values are further discussed in the "Baseline Conditions" section.

This management plan, in addition to all existing management direction, will guide all development, management, and restoration activities in the WSR corridor. Additional information about existing management direction is described in the "Planning Context" section below.

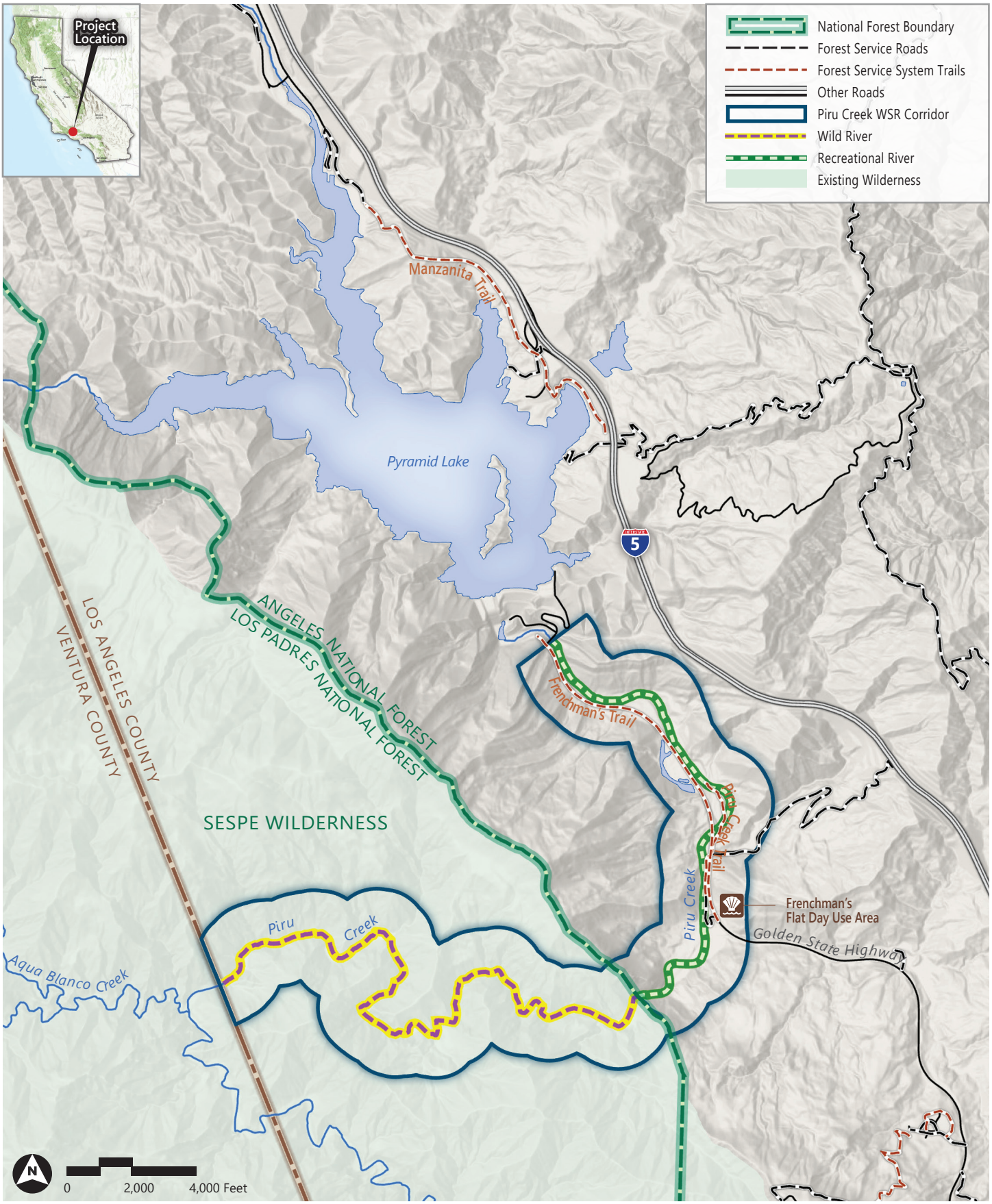

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Figure 1

Project Area and Proposed Final Boundary

River Corridor Locations and Boundaries

Piru Creek is located in Los Angeles County and flows through the Los Padres and Angeles National Forests. Piru Creek drains the Sespe Wilderness and flows into the Santa Clara River. The WSR segment of Piru Creek lies to the west of the Golden State Freeway and south of Pyramid Lake.

The recreational segment of Piru Creek is located on the Angeles National Forest and begins one-half mile downstream of Pyramid Lake Dam at the first bridge crossing, continuing downstream to the boundary of the Sespe Wilderness. The wild segment of the WSR is located within Los Padres National Forest from the Sespe Wilderness boundary to the boundary between Los Angeles and Ventura counties (2009 Omnibus Act).

With this plan, the Forest Service is adopting the interim boundary of 1/4-mile from the ordinary high-water mark on both sides of the river ("river corridor") as the final boundary, consistent with Section 4(d) of the Act. The Forest Service interdisciplinary team (IDT) reviewed the interim boundary and found it to be sufficiently protective of the corridor's river values. In reviewing the interim boundary, the IDT specifically considered land uses and Recreation Opportunity Spectrum (ROS) classes in what was included within the WSR corridor. Land Use Zones are described further in the "Land Uses and Access in River Corridor" section below. ROS classes are used as a "framework for stratifying and defining classes of outdoor recreation environments, activities and experience opportunities. The settings, activities and opportunities for obtaining experiences are arranged along a continuum or spectrum divided into six classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban." (USDA Forest Service 2005d). See Figure 2 for a map of ROS classes within the WSR corridor.

Wild and Scenic River Corridor Classifications

The Wild and Scenic Rivers Act states rivers should be classified, designated, and administered as wild, scenic, or recreational. The three classes (wild, scenic, or recreational) represent a development scale and serve as a framework for future management; they are not synonymous with the river's outstandingly remarkable values. Designating river segments in classifications neither prohibits development nor gives the federal government control over private property. Wild rivers are "those rivers or sections of river that are free of impoundments and generally inaccessible except by trail, with watershed or shorelines essentially primitive and water unpolluted." Scenic rivers are "those rivers or sections of rivers that are free of impoundments, with shorelines or watershed still largely primitive and shorelines largely undeveloped, but accessible in places by road." Recreational rivers are "those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

The 2009 Omnibus Act designated parts of Piru Creek as a Wild and Scenic River comprised of two segments, one classified as wild and the other recreational, based on eligibility reports from the Forest Service. The Forest Service had evaluated 57.3 miles of Piru Creek for eligibility; in the report, the now-designated segments are Segment 5 and part of Segment 6. As established in the 2009 Omnibus Act, the Forest Service administers the 7.25-mile Piru Creek WSR. The wild segment stretches for 4.25 miles and the recreational segment extends for 3 miles.

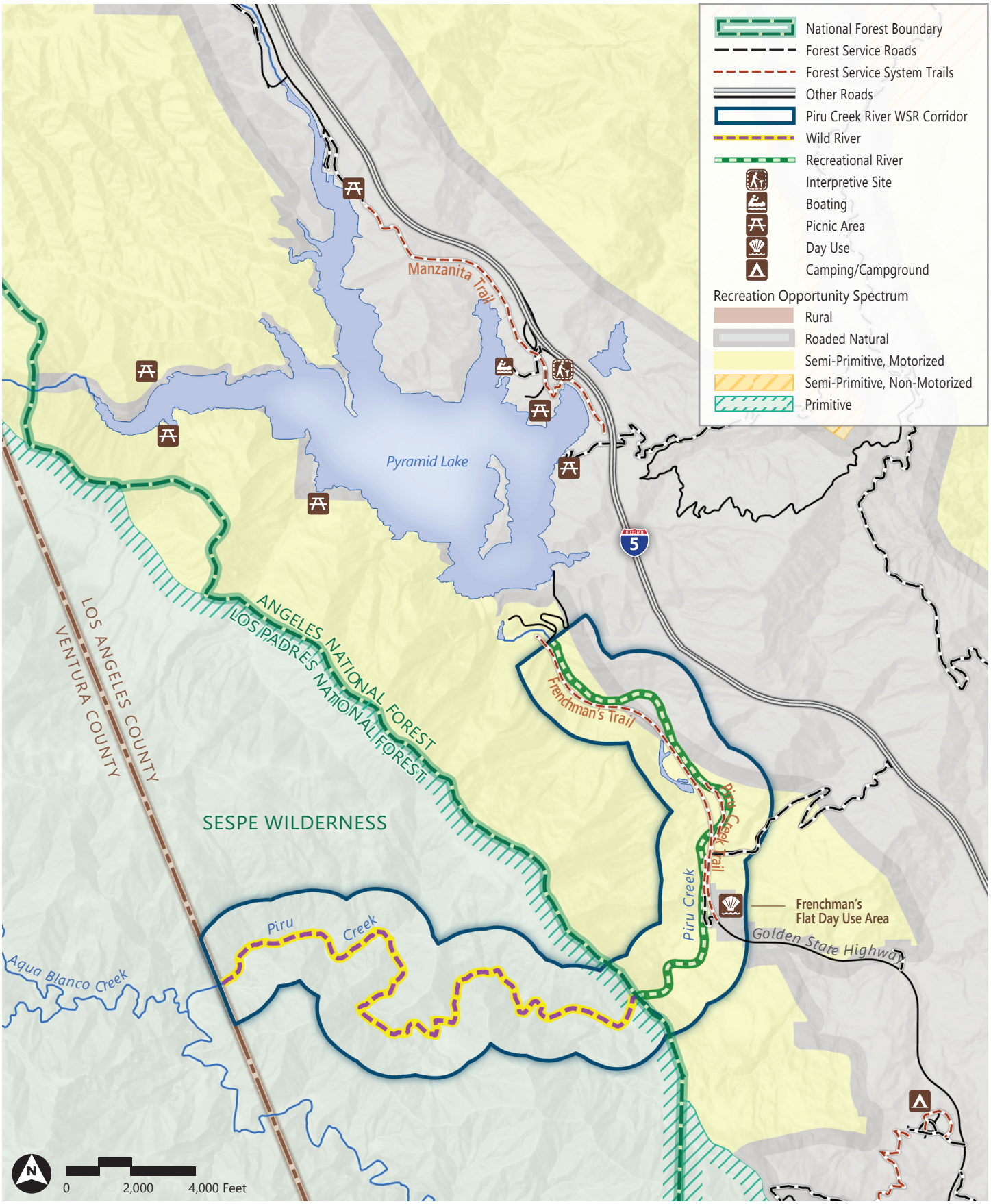

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Figure 2

Recreation Opportunity Spectrum

Regional River Setting

This section describes the regional context of the river corridor. One of the largest river systems in the Southern California region, Piru Creek originates from a group of small springs on the north face of Pine Mountain and flows through the Sespe Wilderness where it eventually meets the Santa Clara River (Los Padres ForestWatch 2022). Most reaches of Piru Creek have water year-round (USDA Forest Service 2005b).

Piru Creek is located within the northern portion of the Angeles National Forest. The Angeles National Forest is diverse in its terrain and appearance. Elevations range from 1,200 to more than 10,000 feet. Much of the forest is covered with dense chapparal vegetation which transitions to pine and fir-covered slopes in higher elevations (USDA Forest Service 2024a). Situated just north of Los Angeles (within a one-hour drive) and along the Interstate 5 transportation corridor to the west, the forest covers nearly 700,000 acres and provides unique outdoor recreation opportunities and solitude experiences in the region (USDA Forest Service 2024a).

On the Los Padres National Forest, Piru Creek exists entirely within the Sespe Wilderness in a primitive, undeveloped region in the eastern portion of the forest. Narrow canyons and steep slopes characterize the area and some of the oldest rocks in the Transverse Ranges underlie the Piru Creek watershed (USDA Forest Service 2005b). There are no Forest system trails and use levels are low. Estimates of visitor use in the wild segment range from anecdotal staff estimates of likely fewer than 100 visitors annually in 2020 (USDA Forest Service 2021) to estimates of fewer than 450 visitors annually in 2024. Located north of Santa Barbara, the forest encompasses approximately 1.75 million acres and serves a large population based in the San Francisco Bay area, greater Los Angeles Metropolitan area, and southern San Joaquin Valley area (USDA Forest Service 2024b).

Planning Context

The Forests' responsibilities and requirement to comply with other federal laws remains unchanged by direction in this plan. The planning context for this CRMP includes, but is not limited to, the following other laws, regulations, policies, and special area plans that guided development of this plan, as well as future river management.

Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act of 1968 preserves selected rivers and their immediate environments in free-flowing condition to protect them for the benefit and enjoyment of present and future generations. These rivers may possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or similar values. The Wild and Scenic Rivers Act states rivers should be classified, designated, and administered as wild, scenic, or recreational. The Wild and Scenic Rivers Act requires the administering agency to establish a detailed river corridor boundary of an average of not more than 320 acres per river mile and to prepare a CRMP for those areas. The Act also requires the identification of user capacities and the development of management strategies to manage use within those capacities (IVUMC 2016a). A user capacity analysis is being conducted for Piru Creek and will be completed with the final CRMP.

Section 7 of the Act requires that potential water resources projects (projects involving construction activities below the ordinary high-water mark) are evaluated to assess their effects on river values. Section 7 requires evaluation of federally assisted water resources projects and a determination by the river-administering agency, prior to implementation, that water resources projects that would occur within the designated WSR corridor would not have direct and adverse effects on river values, or that water resources projects that would occur above, below, or on a tributary of the designated WSR segment would not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values of the WSR (IWSRCC, October 1st, 2024). If the river-administering agency determines that the proposed water resources project would have direct and adverse effects on river values (or, if outside the designated WSR corridor, would invade the area or unreasonably diminish scenic, recreational, and fish and wildlife values) then federal agencies are prohibited from assisting with the project (e.g., issuing a license, preliminary permit, permit, or authorization, or providing federal funding). Section 7 prohibits the Federal Energy Regulatory Commission from licensing construction of hydroelectric facilities within the designated WSR corridor, and can apply to relicensing decisions upstream, downstream, or on a tributary of a WSR if they have potential effects on the WSR.

2009 Omnibus Public Land Management Act (Public Law 111-11)

The 2009 Omnibus Act was passed to designate certain land as components of the National Wilderness Preservation System, to authorize certain programs and activities in the Department of the Interior and the Department of Agriculture, and for other purposes. Section 1805 of the 2009 Omnibus Public Lands Management Act added two segments of Piru Creek to the National Wild and Scenic Rivers System through an amendment to Section 3(a) of the Wild and Scenic Rivers Act.

Forest Plan

The National Forest Management Act of 1976 (NFMA) establishes standards for how the Forest Service manages national forests and requires the development of land management plans (Forest Plan/ LMP) for national forests. The 2005 LMP for the Angeles and Los Padres National Forests is the guiding direction for the forests. The 2005 LMP includes desired conditions and management direction for several eligible Wild and Scenic Rivers that were later designated, including Piru Creek.

Within the 2005 LMP, management direction was specifically developed to preserve the free-flowing condition and water quality and to protect the ORVs for which Piru Creek was later congressionally designated. Management activities that are inconsistent with these objectives will not be permitted.

Forest Service Manual—Comprehensive River Management Plan

Forest Service Manual 2354 provides additional information on the requirements for completing a CRMP. Additional guidance on the suggested contents of a CRMP is found in the Wild and Scenic River Management Responsibilities, a technical report of the Interagency Wild and Scenic Rivers Coordinating Council (2002). The suggested contents for a CRMP include a description of the river setting and resource values, planning context, coordination with others, management direction, management actions, and monitoring strategies.

Government to Government Tribal Coordination

Joint Secretarial Order No. 3403 provides guidance with regard to Government-to-Government relations with tribes and agency policy and guidance on tribal consultation and other engagement. Throughout the planning effort the agency has engaged with interested tribal parties. Formal Consultation with Federally Recognized Tribes who ascribe cultural affinity with this river segment was initiated on February 25, 2021, with the Santa Ynez Band of Chumash Indians and the Tejon Indian Tribe. Input during this consultation effort involved a request in identifying any rare, unique, or exemplary natural or cultural resources important to the Tribes. While no formal comments were received at this time in relation to ORVs, continuing consultation on the development of the CRMP is ongoing, and the agency will continue to engage interested tribal parties in river management issues in the future.

Coordination with other Interested Parties

Section 3(d)(1) of the Wild and Scenic Rivers Act also provides guidance in regard to coordination with others, and 36 CFR 800.2(c)(2)(ii)(F)(5) of the National Historic Preservation Act encourages consultation with certain individuals or groups who may have certain knowledge or demonstrated interest. Consultation and outreach to 14 individuals and/or groups identified as point of contacts by the Native American Heritage Commission was initiated on March 2, 2021, comprising Native American contacts for both the Angeles National Forest and Los Padres National Forest. The Fernandeño-Tataviam Band of Mission Indians was the only group that responded. A meeting was held with a tribal representative on August 30, 2022, specifically as it related to input on ORVs, while consultation on the development of the CRMP is ongoing.

Federal Reserved Water Rights

Section 13(c) of the Wild and Scenic Rivers Act expressly reserves the quantity of water necessary to achieve the Act's purposes for each WSR designation, unless specified otherwise. As a result, Piru Creek WSR is entitled to protection by a federal reserved water right that was created when Congress designated the river. The federal reserved water right only protects the portion of Piru Creek in the WSR corridor and does not extend to downstream locations. The federal reserved water right protects the flows necessary to support the ORVs, which include fisheries and geology and, in the wild segment only, scenery and recreation.

Wilderness Act

The Wilderness Act of 1964 also contributes to the planning context of the corridor. The Wilderness Act (Public Law 88–577) manages wilderness areas in the corridor to preserve their unique character.

Endangered Species Act

The Endangered Species Act (ESA) of 1973 (Public Law 93-205) regulates the conservation and protection of the corridor's endangered and threatened species and their habitats. For a map of wilderness area in the WSR corridor, see Figure 3.

Clean Water Act

The Clean Water Act of 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. This law is administered and enforced by the State of California Water Resources Control Board. This project as proposed complies with the federal Clean Water Act. The results of Forest Service management must not exceed water quality standards. This project will protect water quality through the application of Best Management Practices Water 1 through Water 15 (USDA Forest Service 2012).

Land Uses and Access in River Corridor

Piru Creek supports a variety of land uses within the WSR corridor. All of the land within the corridor is National Forest System land and is accessible via the Interstate 5 transportation corridor, which travels between the two national forests. Land use in the WSR corridor varies widely based on the segment's classification. There are no mining or grazing activities within the WSR corridor.

On the Angeles National Forest, the river corridor winds through the following Forest Plan Land Use Zones: back country, non-motorized; developed area interface; and back country (motorized use restricted). The back country, non-motorized zone is generally low use, with few, if any roads. There are some dispersed recreation activities and infrastructure is generally limited to trails and signage. The developed area interface is the most intense Land Use Zone and is adjacent to communities or concentrated developed areas where the level of use and infrastructure is higher than in other zones. The back country (motorized use restricted) zone is generally undeveloped with few roads. The level of use and infrastructure is low to moderate (USDA Forest Service 2005a).

On the Los Padres National Forest, the river flows through the Existing Wilderness Land Use Zone, which is a zone of lowest land use intensity for designated wilderness (USDA Forest Service 2005b). The Sespe Wilderness, which encompasses all of the wild segment on the Los Padres National Forest, offers primitive and remote experiences for visitors, though there are few visitors overall along this segment. See Figure 3 for a map of Land Use Zones within the WSR corridor.

Most access to the river corridor is provided by the Frenchman's Flat Day Use Area along the recreational segment on the Angeles National Forest, which is a highly concentrated use area. This fee area is accessed via the Golden State Highway (former state Highway 99) and offers parking along the road. This area also offers access to non-motorized recreation such as fishing, swimming, hiking, kayaking, and wildlife viewing along Piru Creek, as well as some dispersed campsites and picnicking areas. Camping is discouraged but not prohibited within the WSR corridor. Campfires are prohibited year-round. Most recreational use takes place between Frenchman's Flat and a USGS gauging station (locally called "the waterfall") north of Frenchman's Flat. Beyond this, most hiking, biking, and fishing takes place along the Golden State Highway, as well as occasional hunting. There are a few designated non-motorized trails in the corridor (Piru Creek Trail and Frenchmen's Trail). Osito Canyon is also in the vicinity and flows into Piru Creek but receives minimal use due to the challenging terrain and distance to get down into the canyon.

Pyramid Dam and the Santa Felicia Hydroelectric Dam, which are licensed by the Federal Energy Regulatory Commission (FERC), are located just above (Pyramid) and several miles below (Santa Felicia) the WSR corridor. Pyramid Dam stores water from Pyramid Lake for use in Ventura and Los

Angeles counties and is part of the State Water Project, the largest state-owned and operated water supply project in the U.S. The FERC license for this dam expired in January 2022 and at the time of writing, an integrated relicensing process is underway; California Department of Water Resources (DWR) and the Los Angeles Department of Water and Power are currently operating under an annual FERC license that maintains the existing license terms and conditions. While the dam is located north of the WSR corridor, its use and operations affect water flows in Piru Creek and the subsequent uses throughout the river corridor. Portions of the infrastructure licensed by FERC are within the WSR Corridor. These facilities include access adits into the Angeles tunnel, and the access road to them. The Santa Felicia Dam is located approximately 12 miles downstream of the lower terminus of Piru Creek WSR and impounds Lake Piru (USDA Forest Service 2022).

Other minor land uses in the WSR corridor include the Cherry Canyon and Slide Mountain Forest Roads, a small portion of the Interstate 5 easement (not the actual highway), and apiary permits for honey boxes approximately 0.75 miles downstream of the beginning of the WSR corridor. Specifically, permits have been granted for Fischer Apiaries and Cary's Honey Farms for three sites and eight sites, respectively. The permit for Fischer Apiaries covers approximately .25 acres and the permit for Cary's Honey Farms covers approximately 1.5 acres. A few of these sites are located just north of Frenchman's Flat Day Use Area, along the Golden State Highway. These sites contain large beehive boxes located in an open area or field.

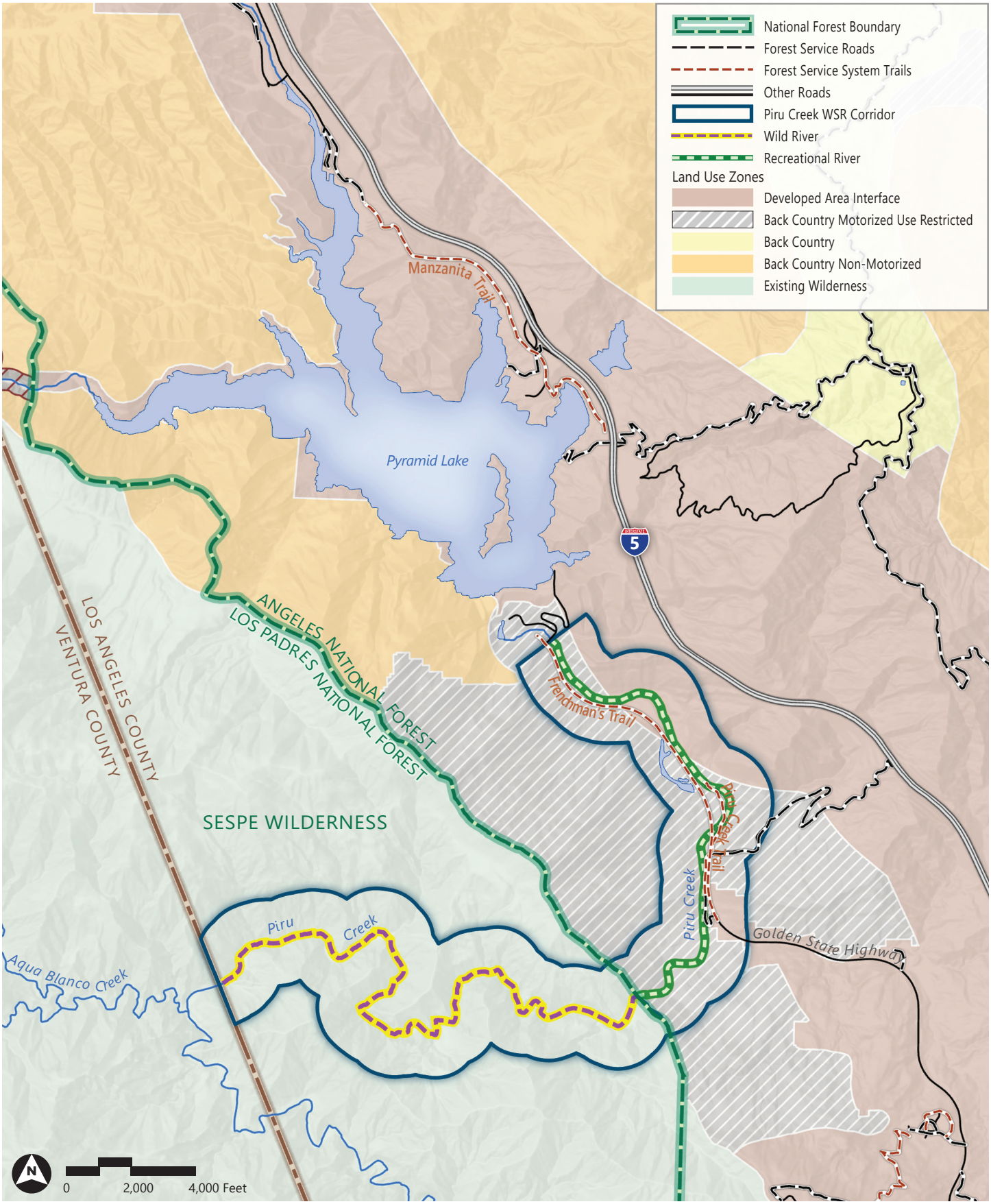

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Figure 3

Land Use Zones

Baseline Conditions

Management emphasis in the designated wild and scenic river corridor is to protect and preserve the free-flowing condition, water quality, and ORVs. The Act specifies that designated rivers "shall be administered in such manner as to protect and enhance the values which caused it to be included in said system…" (U.S. Congress 1968).

Free-Flowing Condition and Water Quality

Free Flow

Section 16b of the Wild and Scenic Rivers Act defines "free flowing" rivers as any river or section of river existing or flowing in natural condition without impoundment, diversion, straightening, rip rapping, or other modification of the waterway. There are no impoundments within the designated segments of Piru Creek, thus the river is considered free flowing. Pyramid Dam impounds Piru Creek directly upstream of the designated segment. Pyramid Dam was constructed by the California Department of Water Resources in the 1960s and completed in 1973 as part of the State Water Project and has a storage capacity of 161,375 acre-feet of water. California Department of Water Resources controls releases from Pyramid Lake under a FERC license. These releases control the downstream flow of Piru Creek. The license Article 52, as amended in 2009 after a temporary waiver in 2005, requires the licensees to match outflows from Pyramid Lake to natural inflows to Pyramid Lake, to the extent feasible for operations and safety. This flow regime is to avoid impacts to the federally endangered arroyo toad (*Anaxyrus californicus*). The license allows for limited exceptions for emergency flood protection and other testing, and delivery of water to United Water Conservation District Lake Piru in the winter months (November to February) when flows would not interfere with arroyo toad reproduction.

A review of the streamflow data (October 1988 to September 2023) from USGS Stream Gauge 11109525, Piru Creek below Pyramid Lake near Gorman, CA, shows fluctuations in discharge from a monthly mean high value of 780 cubic feet per second (cfs) recorded in February 1998 to a low of 1.8 cfs recorded in July 2018. Mean daily flow for the entire period of streamflow data is 48.2 cfs, with a peak daily mean value of 6000 cfs, recorded on February 23, 1998, and two low values of 0.0 cfs recorded on September 4 and 5, 2012. Mean daily flow is greatly affected by season, with the wetter winter season (December through April) having a substantially higher frequency of high flow events than the drier summer months. Review of the same streamflow data shows that mean daily flow rates never exceed 200 cfs in the months of May through November, whereas flows exceeding 1000 cfs are almost exclusive to the months of January through March.

Summer discharge averaged 26.1 cfs for the month of July for the period of 1989 to 2006. Summer discharge averaged 4.8 cfs for the month of July for the period of 2007 to 2023. In approving the Article 52 operating guidelines in 2009, FERC recognized that the unnatural supplemental summer releases were not protective of arroyo toads. The intent of the modifications to Article 52 is to have operational releases reflect the natural hydrograph for protection of downstream resources and thus the current average summer discharge is lower than the values recorded from 1989 to 2006. Summer streamflow is augmented upwards of 0.8 cfs above the dam discharges in the recreation river segment from streamflow from tributaries into Piru Creek into the wild river segment.

A portion of the Golden State Highway was built through the recreation segment between 1929 and 1933 to provide a safer three lane road through the Tejon Pass to Gorman, California. Construction of this road bisected portions of the stream as evidenced in the 2018 NAIP imagery. Portions of the Golden State Highway north of this river segment are submerged under Pyramid Lake. The FERC license for Pyramid Dam includes access adits to the tunnel that is part of the hydroelectric infrastructure, as well as a paved road across Piru Creek to access these adits.

Potential limits to the free flow of Piru Creek include a nonfunctioning USGS gauge (#11109550) containing a damaged concrete weir within the streambed, the Golden State Highway, the FERC-licensed access road, and small rock dams occasionally created by visitors. Management actions to ensure the free flow of Piru Creek is maintained are proposed below.

Water Quality

According to the California State Water Resources Control Board (CWRCB), the designated beneficial uses of water for the recreational and wild segments of Piru Creek are agricultural supply; cold freshwater habitat; municipal and domestic supply; non-contact water recreation; fish spawning, reproduction, and/or early development; warm freshwater habitat; and water contact recreation.

Both portions of the river segments are listed in the 2018 Water Quality Integrated Report (CWRCB, 2018) as an impaired waterbody (Class 5) with a Total Maximum Daily Load (TMDL) needed for chloride, pH, and toxicity. The California Water Quality Board for the Los Angeles Region is responsible for TMDL development. A TMDL analysis was undertaken for both chloride and pH that was due to be completed in 2019 but is not available at the time of this report. A TMDL analysis for toxicity is scheduled to be completed in 2027.

The Watershed Condition Class (WCC) rating for the Fish Creek-Piru Creek HUC12 watershed is listed as functioning at risk with both the water quality and water quantity metrics rated as poor. The water quantity metric is listed as poor due to the artificial impoundments of natural streamflow from Pyramid Lake.

The recreation segment has very gentle slopes averaging less than ten percent. Solar radiation in this segment is higher than average, providing a cooling effect to visitors from evapotranspiration of the cold waters discharged from Pyramid Lake. Solar radiation in the wild segment is much lower than average, reducing evapotranspiration rates and maintaining cooler surface stream temperatures, which are beneficial to the local fish and wildlife species.

The wild segment is composed of a natural landscape with steep gradients, including slopes over 100 percent. The only major disturbances in modern times were caused by the 1928 Didge Fire #96 and the 2006 Day Fire. These two wildfire events would have accelerated erosion for up to three to five years based on soil burn severity. Erosion rates would typically trend back to normal ranges after five years.

Outstandingly Remarkable Values

The Wild and Scenic Rivers Act requires that each river possess one or more outstandingly remarkable values to qualify for designation. In order to be assessed as outstandingly remarkable, a river-related value must be a unique, rare, or exemplary feature that is significant at a comparative regional or national

scale. While the spectrum of resources that may be considered is broad, all values should be directly river related. To be considered river related, a value should be located in the river or its immediate environment (generally within ¼ mile on either side), contribute substantially to the functioning of the river ecosystem, owe its existence to the presence of the river, or some combination of these things. The Forest Service defined the region of comparison in the *2024 River Values Assessment For Piru Creek Wild and Scenic River*, included in this document as Appendix A.

Per Public Law 102-301 in 1992, Piru Creek was considered as a potential addition to the National Wild and Scenic Rivers System. The Forest Service conducted an eligibility study during the Forest Plan Revision process for the Angeles and Los Padres National Forests, at which time seven segments of Piru Creek were evaluated to determine whether they were free flowing and contained ORVs. The portions of the river that were ultimately designated as a WSR (Segment 5 and part of Segment 6) were recorded as eligible in the 2006 Forest Plan Records of Decision. Geology was found to be an ORV for the portion of the river that was designated as a WSR. Other values studied include scenery, recreation, fish and wildlife, cultural, historic, and botanical resources. These were initially found not to be outstandingly remarkable in lower Piru Creek (Segment 5 and part of Segment 6) when viewed within the region of comparison.

In 2020, a Forest Service interdisciplinary team convened to complete a new river values assessment as part of this CRMP development process, in order to review and validate previous findings about river values specific to the designated segments of Piru Creek. The river values evaluation process is further described in Appendix A. The interdisciplinary team included specialists in the following areas: hydrology, geology, fisheries, wildlife, botany, recreation, and archeology. Worksheets were prepared for each of the two designated river segments, for each value, to assess existing conditions, changes, values, and potential indicators (USDA Forest Service 2022). During this time, the team determined that fisheries in the wild segment of Piru Creek are outstandingly remarkable and added this as an ORV to the WSR, whereas it was not initially considered outstandingly remarkable during the eligibility study in 2006. Fisheries was added as an ORV in the recreation section following comments received on the River Values Report in 2023. Upon further analysis, it was determined that because the existing fish population shares the same genetic traits as the population in the wild section, it was warranted they would be listed as an ORV in the recreational section. Upon further analysis of the river values assessment, scenery was also determined to be outstandingly remarkable in the wild segment of the WSR. Further changes were also made to the assessment that added recreation as an ORV for the wild segment. This change was made following extensive public engagement, including a stakeholder site visit and additional data gathered from whitewater boating groups. Finally, in response to public comments on the EA, the Forest Service also added wildlife as an ORV for both the recreational and wild segments.

The ORVs identified for the river are listed below in Table 1 and further described in the following section. See Appendix A for additional detail about ORV findings and rationales, as well as the criteria used to define each ORV.

Table 1. Outstandingly Remarkable Values for Piru Creek

ORV Name	Recreational Segment	Wild Segment
Geology	Yes	Yes
Fisheries	Yes	Yes
Wildlife	Yes	Yes
Scenery	No	Yes
Recreation	No	Yes
Historic and Cultural	No	No
Botany	No	No

Geology

Baseline Conditions

The east-west trending Transverse Ranges include California's highest peaks south of the central Sierra Nevada and the only Precambrian rocks in the coastal mountains of the United States. The Transverse Ranges are a unique geomorphic, stratigraphic, petrologic, and structural belt 400 kilometers long and 100 kilometers wide that is offset by a few tens of kilometers right laterally by the northwest trending San Andreas fault system. The prominent east-west trend of the Transverse Ranges is unique among the rest of the northwest-southeast trending coastal ranges in California. It has been proposed that they have rotated significantly from their original position. Along the entire mapped length of the San Andreas Fault Zone, from northern California to Mexico, no other such diverse belt of rocks, structure, and geomorphology similar to the Transverse Range Province crosses the zone. In addition, despite their comparatively small area, the Transverse Ranges incorporate a greater spectrum of rock types and structure than any other province in the state. The Transverse Ranges are likely the result of compressional forces along the Big Bend in the San Andreas Fault that itself is a unique geologic feature in North America if not the world.

Piru Creek, below Pyramid Reservoir, flows through scenic tilted layers of sedimentary rocks of the Ridge Basin Group, an inter-montane basin exposing the interrelationships of tectonics and sedimentation, and often the subject of geology field trips by academic and casual interest groups. The Ridge Basin is a prominent, northwest-southeast oriented basin between the San Gabriel Fault to the southwest and the San Andreas Fault to the northeast. The basin developed during a tectonically active period in the late Miocene to early Pliocene (11-5 Ma), during which about 14,000 meters of strata accumulated (Schwartz 2020), which is characterized by one of the world's highest sediment accumulation rates of about 2 meters /1000 years (Link 1982). The Ridge Basin is the best exposure basin along the San Andreas transform belt and affords an excellent opportunity to observe marine and non-marine facies in a wrench-fault setting.

Accumulated along and displaced by the San Gabriel Fault are coarse gneissic debris, sourced from the Alamo-Frazier Mountain region, known as the Miocene Violin Breccia. The Violin Breccia along with some other local geological units have been used to restore displacement on the San Gabriel fault, and thereby construct the tectonic history of Ridge Basin (Schwartz 2020).

About 3.5 miles south of Pyramid Dam, Piru Creek turns back to the west and crosses the San Gabriel Fault zone into Precambrian gneiss (metamorphic) and Mesozoic to Precambrian granitic (igneous) and gneissic rocks.

Piru Creek winds its way through tight bends in a 1,500- to 2,000-foot-deep canyon, displaying active debris slides on canyon walls and deep pools and carved granitic boulders in its upper reaches.

The San Gabriel and other nearby faults are interpreted by Dr. John C. Crowell, Professor Emeritus of the University of California, as strands of the San Andreas Fault system within this splintery boundary region between two giant tectonic plates, the North American Plate to the northeast and the Pacific Plate to the west. Where the San Gabriel Fault crosses lower Piru Creek, it separates 4- to 5-million-year-old (young) terrestrial sedimentary rocks from +/- 600-million-year-old Precambrian metamorphosed gneiss, exposing a dramatic change in rock type and geomorphic form (Crowell 1952).

There is a close relationship between the geological/geomorphological values and the river. On one hand, the specific geological units along this proposed segment of Piru Creek are contributing directly to the spectacular geomorphic features (incised gorges and deep pools) of the creek. On the other hand, the fact that the river is flowing in its current path is contributing to the erosional processes (active debris slides) along the creek, along tribute drainages and along the steep slopes of the river itself. In addition, this incised creek has been deepening over millions of years, exposing furthermore the unique geological units along this river.

Public rockhounding and casual collecting does not regularly occur to any notable degree. Since designation there have been several requests and approvals to allow limited rock specimens to be removed for scientific and educational purposes such as carbon dating.

Determination

Geology is an outstandingly remarkable value for both segments of Piru Creek. Piru Creek flows within unique rock formations and features created by the San Gabriel Fault. Scenic tilted layers of sedimentary rocks exist in addition to faults and rock formations with features crucial to the understanding of geological formation on the west coast of North America.

Within the recreational segment, the sedimentary rocks, just below Pyramid Lake are part of the Ridge Basin Group and display a sequence of terrestrial and marine sedimentary rocks, from the late Miocene through early Pliocene Epochs (Crowell 1954, 1982; Dibblee 1996). These sedimentary rocks are important to the study of the development of the Ridge Basin that coincided with movement on the San Gabriel Fault. These rocks provide critical information about the movement history of the unique Transverse Ranges and are considered to be outstandingly remarkable.

The basement rocks that outcrop in the wild segment on the west side of the San Gabriel Fault are considered to be outstandingly remarkable. These rocks are gneisses and migmatites that are banded and form scenic outcrops and boulders along and in the creek. Geologically these rocks are important because exposures of basement rocks provide important clues to this less well-understood portion of North America’s tectonic history.

The active San Gabriel Fault is one of several important structural features greatly influencing the geologic exposures and geomorphic landforms in southern California. The transition from young sedimentary rocks (ridge-basin Group) to old basement rocks along with the clues each one of these rock types provides in the study and understanding of the San Gabriel and San Andreas faults are important geologic features within the corridor. In addition to these unique features, the understanding of the development of the west coast of North America and the geomorphic features as deep canyons and pools along the corridor meet the criteria of outstandingly remarkable.

Fisheries

Baseline Conditions

Native fish species such as resident rainbow trout (*Oncorhynchus mykiss*) and arroyo chub (*Gila orcuttii*), as well as non-native prickly sculpin (*Cottus asper*), inhabit the designated segments of Piru Creek. A species of sucker has been documented in the wild section of Piru Creek as recently as 2018 (CDWR and LA DWP 2019). Authors of the study were not able to identify these fish to species. The arroyo chub, a Forest Service sensitive species, was introduced into Piru Creek and now is mostly extirpated from its native rivers in Southern California (Moyle 2002). Although resident rainbow trout in the designated segments of Piru Creek cannot reach the ocean due to a fish passage barrier at Santa Felicia Dam, they are greater than 99.9% genetically identical to the federally endangered ocean-going Southern California steelhead (*Oncorhynchus mykiss)* found below fish passage barriers within the Santa Clara watershed (Adabia-Cardoso et al. 2016). For example, freshwater resident rainbow trout that have completed their life history cycle entirely in freshwater can produce anadromous progeny that emigrate to the ocean. Conversely, steelhead that migrate from the ocean may produce progeny which complete their entire life history cycle in freshwater (Boughton et al. 2006, Garza and Clemento 2007, Christie et al. 2011, NMFS 2012). The two forms can interbreed and contribute to the genetic pool of the population. Nearly half of the resident rainbow trout surveyed in Piru Creek have been found to contain the genetic marker for anadromy (Pearse et al. 2014).

Water releases from Pyramid to Lake Piru have significantly modified the natural dynamics of stream flow and sediment transport within the channel (see Free Flow section), although the requirement that water releases match the natural inflow have restored some natural function. Several non-native species have also been introduced to Piru Creek, to the detriment of native species; the source of these introductions is not known. Non-native species present in Piru Creek include but are not limited to bullfrog (*Lithobates catesbeianus*), small and largemouth bass (*Micropterus dolomieu* and *Micropterus salmoide*), black bullhead catfish (*Ameiurus melas*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), and brown trout (*Salmo trutta*). The unnatural supplemental summer flows that were released prior to the 2005 amendment of FERC license Article 52 were required to maintain a trout fishery below the dam. Historically, those initial fluctuating stream releases were recommended by USFS and CDFW and were based on air temperatures and not based on the natural hydrograph of Piru Creek. The initial stream releases were incorporated into Exhibit S of FERC license P-2426 and were later amended in 1993 to provide constant summer flows at the recommendation of CDFW. In 2005, Pyramid Dam's license requirements (Articles 51 and 52) to provide minimum flows for rainbow trout were waived to favor a more natural flow regime that would limit impacts to the federally endangered arroyo toad. In granting the waiver, FERC acknowledged that lower water conditions in the summer would negatively affect rainbow trout and "may eliminate the majority of trout occurring in middle Piru Creek

between July and October" (FERC 2005). However, the modified flow regime was found to provide benefits by controlling non-native plant and animal species as well as avoid incidental take of the arroyo toad and the wild rainbow trout have persisted in Piru Creek.

The fishery in the recreational segment of Piru Creek is heavily impacted by the presence of infrastructure including a nonfunctioning USGS stream gauging station and concrete weir, roads, high recreational use including dispersed camping, and a younger aged riparian vegetation since the Day Fire in 2006. The channel spanning weir at the gauging station impedes the free-flowing nature of the river and is likely a fish passage barrier during all flows. Additionally, user-created dams can also be temporary fish passage barriers but likely only at low flows. In most cases, these types of dams are considered a partial barrier because they may only be a barrier to certain life stages, such as juveniles. There is little species diversity or quality of habitat, and although some recreational fishing opportunities persist for wild rainbow trout, angling success is low.

USGS nonfunctioning gauging station and weir

The wild segment of Piru Creek exhibits natural fish habitat, with virtually no infrastructure. The segment contains a variety of mesohabitats typical of lower gradient streams, including deep pools, runs, glides, and low gradient riffles. The steep and narrow canyon walls provide shade, buffering the effects of warm

temperatures and low water in the summer months. The wild segment, however, is still influenced by the presence of dams above and below, as well as multiple non-native species that prey on or are otherwise known to be harmful to native fish stocks. The state manages and is responsible for enforcing state fishing regulations protecting Southern California steelhead.

A 2019 fish population study did not note any substantially changed conditions for fish habitat or populations since the time of wild and scenic river designation (CDWR and LA DWP 2019).

Determination

Fisheries in the wild segment of Piru Creek are an outstandingly remarkable value based on the exceptional habitat and population values for resident rainbow trout, including a diversity of lower gradient stream mesohabitats and a lack of infrastructure and development. The steep canyon walls provide shade during hot summer months and may buffer the impacts of increasing temperatures. Due to the relative merits of this high-quality habitat within the region of comparison, the fisheries value is an outstandingly remarkable value in the wild segment of Piru Creek. The population of resident rainbow trout with native ancestry may also be important resources to the recovery of Southern California steelhead (Adabia-Cardoso et al. 2016). While the development in the recreational section of Piru Creek limits fish habitat quality, the rainbow trout population is present in both sections, making fisheries an outstandingly remarkable value in both segments of Piru Creek.

Wildlife

Baseline Conditions

The natural dynamics of stream flow and sediment transport within Piru Creek have been modified significantly. Nonnative species include but are not limited to bullfrog, small and large-mouth bass, black bullhead catfish, and green sunfish. In 2005, the DWR began releasing water from Pyramid Dam matched to reservoir inflows, to more closely mimic natural hydrologic conditions. The modification was intended to benefit arroyo toad populations and habitat.

The wild segment of Piru Creek is relatively narrow with steep canyon walls bordering either side of the creek. The narrow riparian habitat corridor consists mostly of scattered stands of valley oak and sycamore with thickets of arroyo willow (Salix lasiolepis) and mulefat (Baccharis salicifolia) bordering the stream margins. The two-striped garter snake (Thamnophis hamondii), a Forest Service sensitive species, is known to occupy Piru Creek WSR.

In 2011 the US Fish and Wildlife Service (USFWS) published a Final Critical Habitat Designation Rule for the arroyo toad in the Federal Register. This listing noted that the change in water releases from Pyramid Dam have likely benefitted arroyo toad habitat throughout Piru Creek, but the arroyo toad occupied and designated critical habitats do not occur within Piru Creek WSR. Currently, occupied and designated critical habitats are located approximately 0.5 miles downstream of the Piru Creek WSR (76 FR 7246). However, due to potential increase of suitable habitat from water releases from Pyramid Dam, the Piru Creek WSR could provide essential habitat linkages between known occupied areas and assist in the survival and expansion of the species.

Critical habitat was designated for the southwestern willow flycatcher (Empidonax traillii extimus) in 2013. There are 70 acres of critical habitat within Piru Creek Wild and Scenic River. The final critical habitat designation included 208,973 total acres, 38,564 of which are in the region of comparison, the Southern California Mountain and Valley Ecological Section. This designated critical habitat provides important linkages to habitats throughout the nation and region. The southwestern willow flycatcher breeds in dense vegetation along rivers, streams, or other wetlands, which are found throughout the species designated critical habitat in the Piru Creek corridor (FWS 2012). No recent surveys have been conducted along the Piru Creek corridor to establish occupancy within the designated critical habitat. Throughout the Piru Creek corridor, there is riparian vegetation that provides habitat for riparian-reliant species, such as the Federally Endangered least Bell's vireo (Vireo bellii pusillus). These riparian zones can provide essential foraging and stop over locations during migration. However, there is no designated critical habitat and are no known nesting or roosting least Bell's vireo within the Piru Creek WSR.

The recreational and wild segments of Piru Creek contain designated critical habitat for the California condor (Gymnogyps californianus) with multiple active roosting and perching sites along the wild section of the river corridor, verified with telemetry data between 2022 and 2024. Additionally, habitat along the river corridor has the potential to support nesting pairs with suitable habitat demonstrating steep canyon walls, ridgelines, rocky outcrops, and access to water.

The southwestern pond turtle (Actinemys marmorata pallida), a federally proposed species is known to occur within the recreational section of Piru Creek. Currently, due to the proposed status of this species, no critical habitat has been designated yet and no surveys have been conducted to determine occupancy throughout the forests. However, presence of this species within the Piru Creek WSR corridor demonstrates that suitable habitat is present.

The federally endangered California red-legged frog (Rana aurora draytonji) occurs downstream (approximately 0.2 miles) of and not within the designated portion of Piru Creek (CDWR 2019b).

Determination

Wildlife within Piru Creek WSR, in both the recreation and wild segments, is an outstandingly remarkable value based on exceptional connective habitat, including a diversity of terrestrial and riparian habitats, a lack of infrastructure and development (in the wild segment), and the presence of multiple TES species within and surrounding the WSR. This area encompasses designated critical habitat for the southwestern willow flycatcher and California condor. Due to its Federal status as a critically endangered species due to low population numbers across its range, the California condor is considered a rare and unique species population with regional and national significance. The Piru Creek WSR provides valuable habitat including steep rocky canyons and ridgelines for roosting and nesting with access to water. Additionally, plentiful riparian habitat with sandy banks and thick vegetation provides suitable habitat for the southwest willow flycatcher, southwestern pond turtle, and two-lined garter snake. While no occupancy is known, due to lack of survey data, for the Arroyo toad, California Red-legged frog, and least Bell's vireo, there is suitable habitat within the river corridor that can support these species along the wild segment of the WSR. The proximity of the WSR to designated critical habitat for Arroyo toad and California red-legged frog may allow for the species to expand into this protected area. Also, steep canyon walls provide shade during hot summer months which may buffer the impacts of increasing temperatures. While the development in the recreational section of Piru Creek limits southwestern pond

turtle habitat quality, the Piru Creek WSR contains high-quality habitat throughout. Therefore, the presence of high-quality habitat for a variety of Threatened, Endangered, Proposed, and Sensitive species and the known occupancy of many of these species makes Wildlife an outstanding remarkable value in both segments of Piru Creek.

Scenery

Baseline Conditions

The recreational segment is characterized by typical landscapes of steep, chaparral covered slopes intermixed with foothill and valley areas of oak woodland and grassland. Strips of cottonwood and willow are adjacent to the relatively straight and confined stream channel. Two valleys in the river corridor, Frenchman's Flat and Piru Ponds, turn green for one to two months in the spring as annual grasses grow, but otherwise the area lacks diversity of views or seasonal variation. The segment is appropriately classified as recreational, as it includes foreground views of a major dam and Interstate 5, and the Golden State Highway directly in the river corridor. Lesser development includes the Frenchman's Flat Trailhead and day use area, with restrooms, picnic tables, garbage dumpsters, and access roads. The recreational segment is classified per the Forest Service scenic attractiveness classes as class B, "Typical."

The wild segment begins where the river enters the Sespe Wilderness. This segment lacks developed features or related sites and sounds, as the topography transitions abruptly from the wider valley of Frenchman's Flat to a narrow, steep canyon with 400-700 feet of elevation relief. Approximately 75 percent of the total wild river segment, and 41 percent of the total WSR corridor, are classified as "Distinctive," or scenic attractiveness class A, containing the highest combination of landform, water, rock, and vegetation.

Since river designation in 2009, several new features have been constructed in the recreational segment, including a new restroom at Frenchman's Flat and a new flood warning system consisting of several small, fenced enclosures around 10-foot poles along the Golden State Highway. In 2018-2019 the Department of Water Resources installed a flood warning system, including a series of flood danger signs along the recreational segment of Piru Creek. These signs are relatively small, were designed to match surrounding colors, and have not substantially changed scenery conditions since designation.

Determination

Scenery is not an outstandingly remarkable value for the recreational section of Piru Creek. The scenery in this section has very typical landscape elements within the region of comparison. The landforms, presence and amount of water, and variety of vegetation are not unique, exemplary, or rare. The high level of development in the recreational segment also limits the overall scenic quality.

Scenery is an outstandingly remarkable value for the wild section of Piru Creek. The presence of water in such relatively dry, steep topography does offer high scenic attractiveness, in the wild segment of Piru Creek. The rock formations along the canyon in the wild segment are rare and visually interesting due to a mix of color, textures, and landforms. The striking beauty of Piru Creek WSR's wild segment is well documented in blogs, guidebooks, social media, and user interviews.

Recreation

Baseline Conditions

The recreational segment of Piru Creek contains the Frenchman's Flat Picnic Area and the Golden State Highway, an approximately 2-mile paved road converted to non-motorized trail, that provides the primary access to Piru Creek. Along this route, the primary uses are bicycling, swimming and water play, dispersed picnicking, dispersed camping along the creek at Frenchman's Flat, and catch and release fishing for wild (non-hatchery) trout. Dispersed overnight camping opportunities are concentrated along the river for about one quarter mile north of Frenchman's Flat.

Use levels in this segment are high, and typically exceed the parking capacity of 110 cars during the high use periods of April to November. The climate is mild to temperate, typical of Southern California, and allows for year-round use of most reaches of Piru Creek. An estimated 90 percent of visitors are from the local area. The recreation experience is similar to other major rivers in the region with developed sites and road or trail access along them, such as West Fork San Gabriel and Santa Ynez Rivers, and Manzana and Lytle Creeks. A lack of shade and high temperatures in the summer limit hiking use along the Golden State Highway, some hiking occurs on user developed trails south of Frenchman's Flat, until the canyon narrows substantially just upstream of the Sespe Wilderness and wild segment of Piru Creek. The recreational segment of Piru Creek is a catch and release stream for angling under California Department of Fish and Wildlife (CDFW) Regulations.

The wild segment, located entirely within the Sespe Wilderness, does not contain any National Forest System trails and, in some sections, the river flows through a narrow canyon where travel is necessarily constrained to directly within Piru Creek. Non-technical canyoneering is known to occur within Piru Gorge and the corridor provides access to a more technical route in Ruby Canyon. The wild segment offers opportunities for solitude and primitive recreation that are typical of most wilderness areas including fishing, dispersed camping, and backpacking opportunities. Use levels are very low, estimated no more than 300 visitors annually.

Advanced-level whitewater boating occurs in this segment, featuring Class IV rapids. Boating opportunities are limited to those instances, typically during very wet winters, when Pyramid Dam can release high enough volumes to accommodate boaters (minimum of approx. 200-300 cfs). During the period from 2007 through 2017, there were four years where there were no opportunities for boating, while in other years, as many as 16 boating days were possible (CDWR 2019). Even in those instances, boaters report needing to portage some sections.

The California State Water Board adopted an amendment to the Water Quality Certification issued by the State Water Board (SWB) for the relicensing of Pyramid Dam on March 14, 2023. This amendment may increase opportunities for whitewater boating for up to six weekends in the winter season by controlling the timing and rate of SWP water supply deliveries to United Water Conservation District, which are released in addition to the releases of natural inflow. The deliveries to United Water Conservation District are subject to SWP water supply availability on an annual basis. Whitewater boating opportunities may not be available in all years.

Some changes have occurred within the corridor since designation. A double-sided vault restroom was installed at Frenchman's Flat in 2018. Drought years between 2012-2016 resulted in reduced releases from Pyramid Dam. The COVID-19 pandemic in 2020 substantially increased visitation at all national forests in the region. In 2018-2019 the Department of Water Resources installed a flood warning system, and a series of flood danger signs along the recreational segment of Piru Creek.

California Department of Fish and Wildlife (CDFW) ceased stocking rainbow trout around 2008 in Piru Creek to avoid potential impacts to endangered species. As a result, the recreational fishing opportunities have diminished, although trout do persist in Piru Creek WSR. Angler survey data collected for CDFW by the Fisheries Resource Volunteer Group shows a range of 0.4 – 1.9 fish caught per hour. There are a set of catch and release regulations for approximately 1 mile of Piru Creek recreational segment that prohibit any take of fish, from the start of the WSR 300 yards below Pyramid Dam to the falls upstream approximately a half mile of the Golden State Highway bridge (CDFW 2024).

Determination

For the wild segment only, recreation – specifically, whitewater boating as described below – is an outstandingly remarkable value. For the recreational segment, recreational values are not considered outstandingly remarkable; thus, recreation is not an ORV for the recreational segment.

General recreational opportunities are similar to several other rivers in the region of comparison and are not unique or rare. Recreation in Piru Creek's designated segments generally does not attract visitors from outside the region. A variety of other developed day use recreation sites on the Angeles, Los Padres, San Bernadino, and Cleveland National Forests offer opportunities for accessible water play and dispersed recreational access to rivers for the local population within the Metropolitan Southern California region. Fishing success is below average due to lack of stocking. Several rivers in the region of comparison are recognized as California Designated Wild and Heritage Trout Waters, including the upper Piru Creek drainage above Pyramid Lake. The Piru Creek WSR has not been given this special designation for notable fishing opportunities. The catch and release regulations are in effect for approximately 1 out of 7.25 miles of the WSR (CDFW 2024). The majority of Piru Creek WSR provides recreational fishing opportunities similar to a number of other rivers in the region of comparison.

The geologic interpretive uses are primarily academic (see Geology section), though are of interest to other user groups as well, and are limited by lack of access to the wild segment of Piru Creek. Dispersed recreation and cross-country travel through the wild section is limited due to topography and offers non-technical canyoneering opportunities comparable to other river canyons throughout the region of comparison.

The potential for whitewater boating is constrained due to flows in a manner similar to other rivers in the semi-arid region of comparison Additional boating opportunities during the winter are likely to result from State Water Project FERC license conditions for flow release, which will provide recreational users greater predictability of suitable flows.

Opportunities for whitewater boating occur on other major rivers in the region of comparison, such as the Santa Clara, San Gabriel, Ventura, and Los Angeles Rivers, and Sespe Creek. However, in the wild segment of Piru Creek, the combination of a remote and wild primitive setting, outstanding scenic

combinations of color and landform, easy access from Frenchman's Flat, some predictability of flows from FERC license conditions, and class IV rapids, make whitewater boating opportunities rare and unique within the region of comparison. As indicated by numerous comments including at a stakeholder site visit, Piru Creek regularly draws visitors from throughout the region of comparison, and with implementation of FERC license conditions is likely to draw visitors from outside the region.

In the recreational segment, the scenic values are not present. Vehicle access is not allowed to this segment under the current Angeles Motor Vehicle Use Map and Forest Service travel regulations, and there are not any put in locations for whitewater boaters that are as safe and convenient to access as Frenchman's Flat. There are no class IV rapids in this section. The overall setting and experience are similar to other rivers in the region of comparison, such as the West Fork San Gabriel River. Whitewater boating opportunities in the recreational segment are not rare or unique and lack the potential to draw visitors from throughout and outside of the region of comparison.

Visitor Use Management and Capacity

A user capacity analysis has been completed for Piru Creek in support of the development of this CRMP (included as Appendix B). The Act does not define user capacities or prescribe a particular approach to address user capacities in CRMPs. However, agencies are directed to specify numeric user capacities to define the maximum number of people that can be accommodated in a designated river area without adversely impacting river values (IVUMC 2016b). The capacity analysis identifies current usage at the river, determines the kinds of uses the river can support, calculates user capacities, establishes thresholds of use to prevent river degradation, identifies triggers for management action, and establishes an adaptive management framework.

Management Direction

Management direction contained in this plan is designed to meet Wild and Scenic Rivers Act as well as Forest Service requirements, in order to provide a long-term management strategy for protecting and enhancing the river segment's free-flowing condition, water quality, and ORVs. Management direction in this section consists of desired conditions and management actions. Management direction prioritizes protecting and enhancing WSR values during the planning and implementation of resource management activities in the river corridor. Some specific management actions were developed through the IDT's internal planning and discussions.

Given the multi-jurisdictional nature of WSRs, where appropriate, the Forest Service would continue to work with other agencies that have a nexus in WSR management. Both Forests would actively seek to maintain and enhance a collaborative approach to river stewardship, with Tribes and a wide variety of agencies, organizations, and stakeholders.

Desired Conditions

Desired conditions for the WSR describe the resource conditions, visitor experiences and opportunities, and facilities and services that the agency should strive to achieve and maintain within the designated river corridor in order to protect river values. Desired conditions describe social, ecological, and/or

ecological characteristics of the WSR corridor toward which management of the land and resources should be directed (USDA Forest Service 2012). Actions that lead toward the desired conditions over the long term would be considered consistent with this plan and actions that lead the corridor away from desired conditions over the long term would be considered inconsistent with this plan.

As established in the LMP*, Part 2 Angeles National Forest Strategy* (USDA Forest Service 2005a) and *Part 2 Los Padres National Forest Strategy* (USDA Forest Service 2005b), the Forests has been divided into a series of geographical units called "Places." Each Place has its own landscape character. Landscape character has been described as an overall visual and cultural impression of landscape attributes, the physical appearance and cultural context of a landscape that gives it an identity and "sense of place." Desired conditions for each Place paint a picture of what the Place could be as the Forest Service implements activities to move toward the overall Forest-wide desired conditions (USDA Forest Service 2005a). Parts of Piru Creek are located within the Hungry Valley – Mutau Place on the Los Padres National Forest and the I-5 Corridor Place on the Angeles National Forest. Place-based desired conditions can be found in the LMP sections referenced above.

The desired conditions for Piru Creek are derived from internal planning and discussions from IDT meetings and have been organized by river value.

- Free flow: Stream impediments or barriers are minimized or eliminated over time and through active engagement with partners and permitted users.
- Water Quality: Pollutants are reduced in accordance with TMDL goals. Water quality is improved by reducing sources of sediment over time. General riparian health is maintained or improved.
- Geology: Local geology and landscape features are managed to enhance geological values in the corridor. Access and disturbances are managed in a way that reduces potential impacts on defining geologic features in the corridor.
- Fisheries: Habitat quality for the native population of resident rainbow trout (and other native species) is maintained and improved, with the long-term goal of supporting re-integration of Southern California steelhead trout into Piru Creek WSR with the ancestral steelhead heritage of the *O. mykiss* currently occupying the reach. Actions in Piru Creek and tributary drainages that restore fish passage and benefit and enhance fish habitat and water quality are prioritized. Low level of public use and access in the wild segment of Piru Creek is maintained.
- Recreation: For the wild segment, appropriate levels of visitor safety education about whitewater boating are provided through a variety of methods. Low level of public use and access in the wild section of Piru Creek is maintained. Public access for local populations to rare stream-side dispersed recreation opportunities in the recreational segment is maintained.

Management Actions

The desired conditions described above present a broad vision for the resources in the river corridor. The management actions described in this section are actions that help move the resources toward these desired conditions. For example, management actions that aim to address sedimentation in the corridor help move resources such as water quality and fish habitat towards their desired conditions.

As noted above, this CRMP establishes programmatic management direction. Site-specific NEPA analysis will be done for any actions proposed on Forest Service lands in the WSR corridor. All proposed projects would be checked for consistency with the CRMP during the site-specific analysis. For any water resources project listed below, Section 7 of the Act requires a determination of effect to river values. This determination would be made by FS and take place in future project planning efforts.

- Authorize removal of surface rocks and minerals only within the recreational segment and limit the amount to smallest quantities needed for scientific or educational purposes. Ensure a qualified professional geologist reviews all requests for rock or mineral collection or removal.
- Encourage and promote access to the upper segment of the corridor (recreational segment) to geological classes, study groups, field trips, scientific research and the public in general.
- Develop an educational kiosk presenting the geological history and uniqueness of the region / corridor. This kiosk could be located at the Frenchman's Flat gate (the entry point to the corridor).
- Develop a Road Maintenance Plan with DWR and other partners, including the following:
  - ❑ Best Management Practices to reduce non-natural sources of sedimentation, enhance safety, and manage woody debris
  - ❑ Evaluation of the DWR adit access road for potential improvements to water quality and aquatic organism passage
  - ❑ Potential funding sources for road maintenance or improvement
  - ❑ Improvements to the Golden State Highway to reduce non-natural sources of sedimentation into Osito Canyon

Bank erosion at the DWR road crossing

- Work with USGS to consider repair or removal for the stream gauge which is a barrier to fish and other aquatic organisms and may affect free flowing character.
- Focus improvements to the Frenchman's Flat recreation site on enhancing water quality and sustainability, and keeping recreational impacts concentrated in portions of the recreational segment of Piru Creek. Improvements may also consider equitable access in future designs.
  - ❑ Consider replacing and/or managing for decadent cottonwoods on outer riparian. Include a planting plan to provide shade and habitat in outer riparian zone and to improve user experience.
- Continue to support volunteers dedicated to monitoring and prompt removal of recreational, user-created dams, and other stewardship efforts.
- Review both Forest System Trails in the WSR corridor for location and data accuracy. Conduct a Trail Assessment and Condition Survey using Forest Service protocols.
- Continue full participation in FERC relicensing for Pyramid and Santa Felicia Dams, in order to implement Federal Power Act conditions for resource protection.
- To improve natural resource protection, partner with CDFW to enhance opportunities for presence within the WSR to enforce state code; prioritize the training and certification of recreation staff as Forest Protection Officers. Improve bilingual signage within the corridor to address fishing regulations.
- Collaborate with tribes in the area to improve interpretation of tribal history throughout the WSR corridor.
- Increase promotion of accessible, free recreational opportunities within the corridor for the local public. Promotion may include giveaways, special event days, collaboration with local schools and educational groups, etc.
- Monitor level of boating use as well as occurrence of search and rescue operations during winter releases governed by FERC license conditions to develop a baseline and determine if use or impacts from search and rescue operations increase over time
- Adhere to National Best Management Practices Program, which was developed to improve management of water quality consistent with the CWA.
- To protect condors, ensure signage and visitor information emphasizes threats from micro trash and encourages visitors to remove all signs of use including trash.
- Hold an annual meeting between Recreation staff and interagency Biologists to review ongoing wildlife impacts, species status, any new or changed information on species or habitats, and best practices for conservation.

Potential Future Management Actions

This CRMP establishes programmatic management direction and therefore, site-specific projects are not included as part of this plan[1]. However, the Forests may consider more site-specific projects in the WSR corridor in the future, for which separate NEPA analysis would be conducted. As noted above, all proposed projects would be checked for consistency with the CRMP during the site-specific analysis.

[1] Site-specific management actions are only included in the Management Actions section as opposed to the Potential Future Management Actions section if they are ripe for analysis and are minimally ground-disturbing.

Potential future site-specific management actions for Piru Creek include the following:

- Designate Piru Creek as a priority watershed under the Watershed Condition Framework (WCF)[2] to enhance funding opportunities to improve riparian conditions, fish and wildlife habitat and water quality, including eliminating or reducing sediment sources.
- Plan and implement treatments to control and reduce spread of invasive plant and animal species, including non-native, invasive tamarisk, and monitor and take immediate action to eradicate any invasive aquatic species.
- Assess Proper Functioning Condition of riparian area every five years using baseline developed in User Capacity Study.
- Coordinate, develop, and implement a sign plan with partner agencies; elements to include bilingual text, WSR identification, ORV interpretation, and updating and simplifying the Frenchman's Flat signage including regarding relevant regulations, such as fishing. Include information about microtrash threats to condors and need to minimize.
- Evaluate potential for large scale stream/floodplain restoration at "meander cut off" downstream to "pond." Review past feasibility studies and work with agency stakeholders to identify options for restoring hydrologic and wetland function at the Piru Ponds.
- Support National Marine Fisheries Service (NOAA) and United Water in re-integrating Pacific Steelhead to Piru Creek above Santa Felicia Dam with the ancestral steelhead heritage of the *O. mykiss* currently occupying the reach; coordinate with California Department of Fish & Wildlife in achieving desired conditions for fisheries.
- Support USFWS and CDFW conservation and recovery efforts for all wildlife with a focus on the many diverse listed and proposed species in and near Piru Creek WSR.

Monitoring Plan

The CRMP monitoring plan is intended to track river corridor impacts from various kinds of land uses, including recreation, and to maintain the river corridor's desired conditions. Monitoring these items will provide managers with key thresholds for when changes to management must be considered in order to protect the corridor's ORVs, free flow, and water quality, and to manage use within capacity.

The following table lists the location, issue being addressed, and brief description of CRMP monitoring items. Monitoring design considers past, current, and anticipated future funding levels, along with staffing level and other Forest priorities. The monitoring actions selected are those that address areas of highest concern. In addition to the actions listed in Table 2, monitoring items related to visitor capacity will be cadded when the user capacity analysis for Piru Creek is finalized. River values for which there is no specific monitoring item are already adequately monitored under existing Forest management.

[2] https://www.fs.usda.gov/restoration/Watershed_Restoration/guidance.shtml

Table 2. Possible Monitoring Items and their Locations in the Wild and Scenic River Corridor

Location of Monitoring Action	Potential Issue / River Value Addressed	Monitoring Action
Throughout the WSR corridor	Free flow, Fisheries, Wildlife	Continue to monitor for user-created dams that may impede free flow
Throughout the WSR corridor	Fisheries, Wildlife	Continue and/or enhance monitoring for aquatic invasive species (plants and animals)
Campsites and dispersed camping areas	Water Quality	Continue to monitor for overnight camping within 100 feet of the WSR; continue to monitor compliance with fire restrictions.
Throughout the corridor	Water quality	Monitor for sediment sources and impacts to riparian areas
Frenchman's Flat Day Use Area	Water quality	Continue monitoring for cottonwoods on outer riparian
Throughout the corridor	Water quality and free flow	Conduct surveys of surface water and groundwater to monitor for free flow, recreation use, and riparian health.
Recreational segment	Geology	Maintain in the WSR casefile a record of all requests to collect or remove rocks, review by a professional geologist, and any approvals

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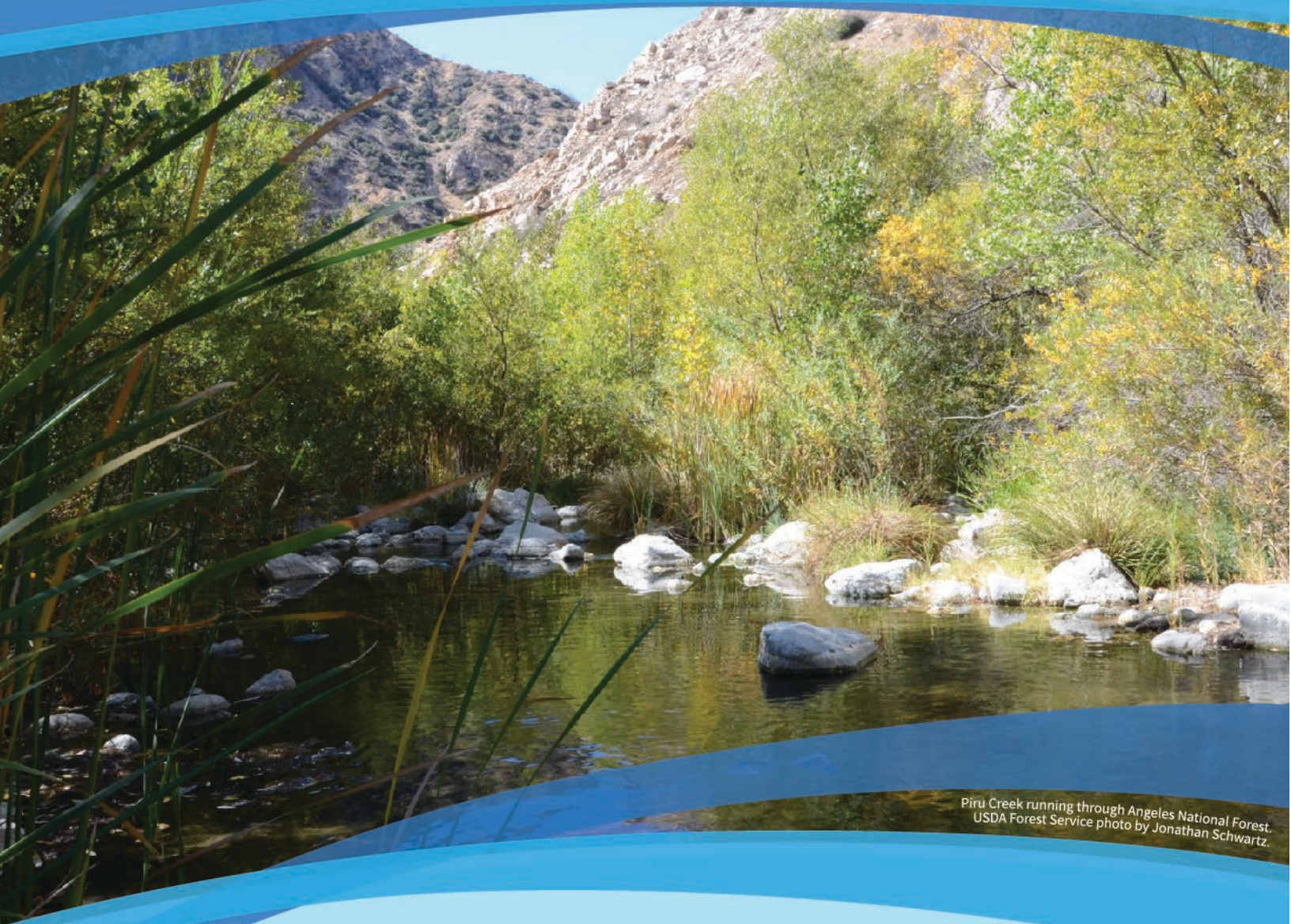
Appendix A: River Values Assessment For Piru Creek Wild and Scenic River

USDA Forest Service
U.S. DEPARTMENT OF AGRICULTURE

Angeles and Los Padres National Forests | March 2025



Piru Creek running through Angeles National Forest.
USDA Forest Service photo by Jonathan Schwartz.

River Values Assessment

For

Piru Creek Wild and Scenic River

For More Information Contact:

Justin Seastrand
Angeles National Forest
701 North Santa Anita Avenue
Arcadia, CA 91006

Michael Papa
Los Padres National Forest
1980 Old Mission Dr.
Solvang, CA 93463

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Introduction

This report describes the values for which Piru Creek Wild and Scenic River (WSR) was added to the National Wild and Scenic Rivers System. River values include free flow, water quality and outstandingly remarkable values. In this report, we document the existing conditions for the free flow and water quality river values. In addition, this report will document which scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values within each wild and scenic river segment meet the standard for outstandingly remarkable values. This report documents the evaluation of resource conditions and river values at the time that Congress designated these rivers as a wild and scenic river and present condition.

The Wild and Scenic Rivers Act requires the administering agencies to "protect and enhance" these river values. Protecting and enhancing the free-flow condition, water quality, and outstandingly remarkable values become the basis for future management decisions within the river corridor and the foundation for managing the wild and scenic river corridor.

Wild and Scenic Rivers Act Requirements

Enacted in 1968, the Wild and Scenic Rivers Act (16 U.S.C. 1271-1278) preserves selected rivers and their immediate environments in a free-flowing condition in order to protect them for the benefit and enjoyment of present and future generations. The Act requires river-administering agencies and other Federal agencies to protect and enhance the values for which the river was designated. The following statutory provisions highlight this "protect and enhance" mandate:

> Section 10(a): Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its aesthetic, scenic, historic, archeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.

Rivers designated by the Act may possess outstandingly remarkable values that may include one or more of the following: "scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values" (Section 1(b)).

This evaluation uses the criteria developed by the Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC, 2010, *"Newly Designated Wild and Scenic River: Interim Management And Steps to Develop a Comprehensive River Management Plan"* and incorporated into agency policy (Forest Service Handbook (FSH) 1909.12, Chapter 82.7)) to evaluate river values and determine the outstandingly remarkable values associated with the river. The FSH is specific to the Land Management Plan Study process, not development of a Comprehensive River Management Plan (CRMP) for a Congressionally designated river like Piru Creek. However, it is consistent with the IWSRCC criteria and so is cited here also.

In order to be assessed as outstandingly remarkable, a river-related value must be a unique, rare, or exemplary feature that is significant at a comparative regional or national scale. For example, while every archeological site is inherently unique and irreplaceable, to be outstandingly remarkable, an archeological site must be of quality or extent such that it is among the best examples of a cultural or historical resource in the region of comparison.

While the spectrum of resources and opportunities that may be considered is broad, all values should be directly river-related. Values should:

1. Be located in the river or on its immediate shorelands (generally within 1/4 mile on either side of the river, as specified in section 4(d) of the Act);
2. Contribute substantially to the functioning of the river ecosystem; and/or
3. Owe their location or existence to the presence of the river.

The description of river values should enable people who have never seen the river to understand whether the river has outstanding values worthy of protection. The determination that a river area does or does not contain one or more outstandingly remarkable values is a professional judgement on the part of the responsible official, as informed by the interdisciplinary team, best available scientific information, and public participation (FSH 1909.12, sec. 82.73).

Piru Creek

Two river segments totaling 7.25 miles of Piru Creek on the Angeles and Los Padres National Forests were designated by the Omnibus Public Land Management Act of 2009 (the Omnibus Act). These designated segments are summarized in Table 1.

Table 1. Description and Classification of Designated Wild, Scenic, and Recreational River Segments

Description	Miles	Classification
Piru Creek from 0.5 miles downstream of Pyramid Dam at the first bridge crossing to the boundary of the Sespe Wilderness	3	Recreational
Piru Creek from the boundary of the Sespe Wilderness to the boundary between Los Angeles and Ventura Counties	4.25	Wild

Located in Los Angeles County, Piru Creek drains the rugged and remote Sespe Wilderness and flows into the Santa Clara River. The recreational segment of Piru Creek is located within the Angeles National Forest, Mojave/Los Angeles Gateway Ranger District. The wild segment (as well as the other undesignated portions of Piru Creek) is located within the Los Padres National Forest, Mount Pinos Ranger District (see Figure 1).

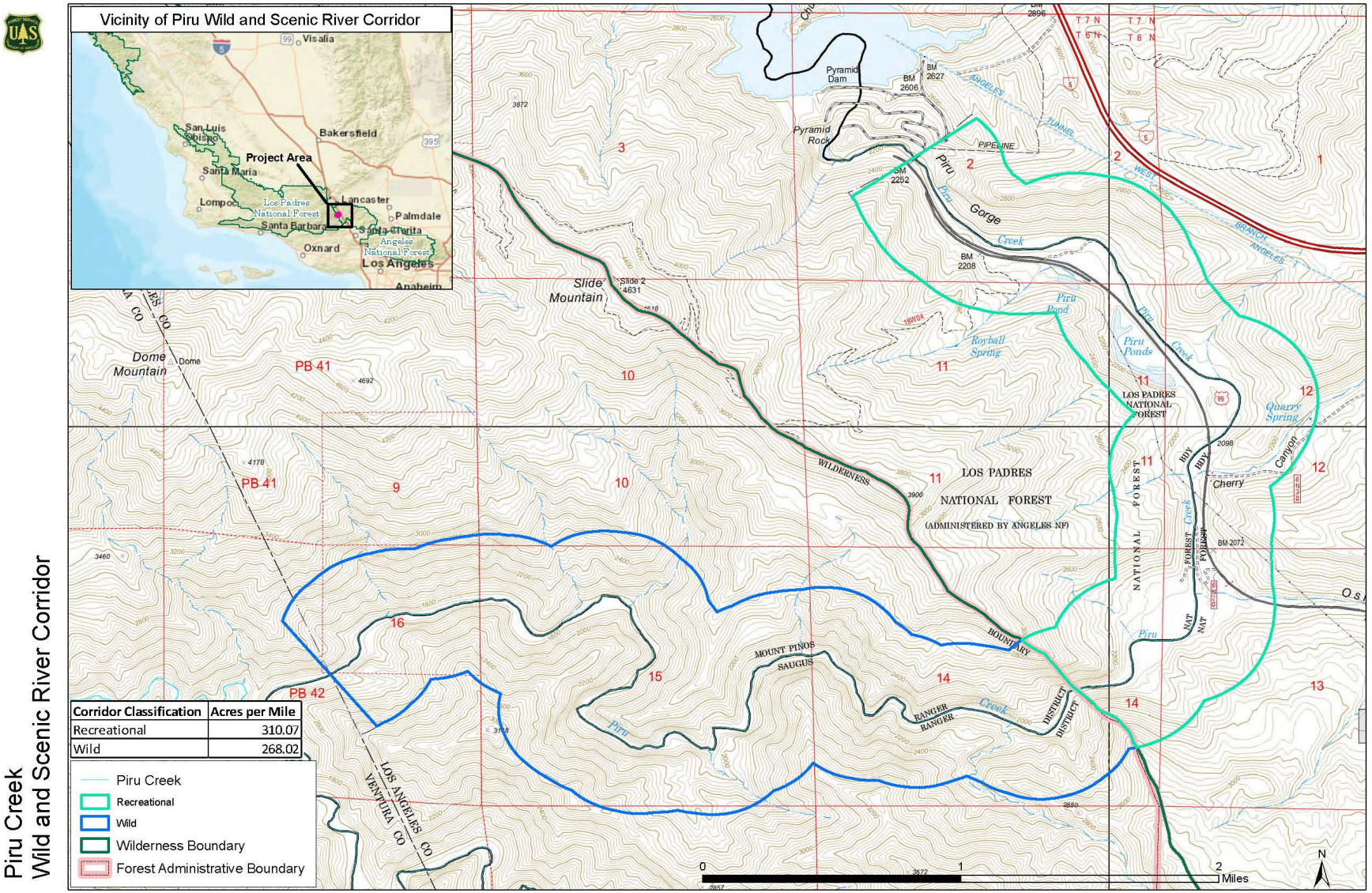

Figure 1: Map of Piru Creek designated segments (interim corridor)

Water Resource Projects

Piru Creek WSR is located between two water resource projects licensed by the Federal Energy Regulatory Commission (Table 2). Pyramid Dam is located immediately upstream of the upper terminus of Piru Creek WSR. Pyramid Dam is a component of the State Water Project, the largest state-owned and operated water supply projects in the United States. An integrated licensing process for Pyramid Dam is currently in progress as of report date. The Santa Felicia Dam impounds Lake Piru, approximately 12 miles downstream from the lower terminus of Piru Creek WSR.

Table 2. Licensed Water Resource Projects Above and Below Piru Creek WSR

Project	License Holder	FERC License Expiration Date
Pyramid Dam, FERC Project No. 2426, State Water Project	California Department of Water Resources, Los Angeles Department of Water and Power	January 31, 2022
Santa Felicia Hydroelectric Dam, FERC Project No. 2153	United Water Conservation District (UWCD)	August 31, 2048

Forest Plan Eligibility Study (2006)

In 1992, Public Law 102-301 mandated that five rivers within the Los Padres National Forest, including Piru Creek, be considered as potential additions to the National Wild and Scenic Rivers System and be studied for eligibility and suitability. Those studies began in 1998, were continued as part of the Forest Plan Revision process and were eventually published as Appendix E in the Final Environmental Impact Statement for the 2006 Land Management Plans for the Southern Californian Forests (USDA, 2005).

During the 2006 river study, seven segments of Piru Creek were evaluated to determine if they were free flowing and contained outstandingly remarkable values. Segments 1-4 (above Pyramid Lake) were referred to as upper Piru Creek. Segments 5-7 (below Pyramid Lake) were referred to as lower Piru Creek. All segments evaluated were found to be eligible (free flowing and having at least one outstandingly remarkable value) in the 2006 Forest Plan Record of Decisions (USDA, 2006a and b, 2005a). Segments 1-4 were also found to be suitable and were recommended for designation. Segments 5-7 were not evaluated in the suitability study.

Geology was found to be an outstandingly remarkable values for lower Piru Creek, including the segments that are now part of the national wild and scenic river system (Segment 5 and part of segment 6). Other values studied include scenery, recreation, fish and wildlife, cultural, historic, and botanical resources. While the river has important resources and values for each of these, these were found not to be outstandingly remarkable in lower Piru Creek when viewed within the region of comparison.

This information on river segments previously studied for eligibility & suitability is provided for context and background. It represents a starting point for prior information. This River Values Assessment (RVA) has used and incorporated data from these prior studies, but the RVA is used to inform a CRMP only for the sections of Piru Creek designated a WSR by Congress. Eligible or Suitable segments not yet designated will continue to be managed according to interim protection guidelines in standards found in Forest Service Policy (Forest Service Manual 2354.62). Any consideration of sections of Piru Creek outside the designated WSR are outside the scope of this RVA and the CRMP.

Evaluation Process

While previous evaluations have reviewed river values, a new assessment was completed as part of the CRMP development process to review and validate previous findings about river values specific to the designated segments of Piru Creek. The river values evaluation documents clear descriptions of values to inform protection of those values within the CRMP. The evaluation must take into consideration all features which are directly river-related and provide a holistic approach to investigating the relationship of river features. There are three components to the river values evaluation process:

1) outstandingly remarkable values must be judged in comparison with the characteristics of other similar regional rivers, so the evaluation should establish the 'region of comparison' (Forest Service Handbook 1909.12, Chapter 82.73);

2) outstandingly remarkable values must meet the evaluation criteria - Forest Service directives establish a baseline set of criteria as minimum thresholds to establish outstandingly remarkable values that can be refined (Forest Service Handbook 1909.12 Chapter 82.73a); and,

3) if the above criteria are met, the outstandingly remarkable values should be described clearly for each segment.

We convened an interdisciplinary team in July and August of 2020 to evaluate river values for Piru Creek. Members of the team included specialists in the following areas: hydrology, geology, fisheries, wildlife, botany, recreation, and archeology. Worksheets were prepared for each river segment, for each value, to assess existing conditions, changes, values, and potential indicators. Their draft worksheets have been kept on file as draft workshop documents and the findings from the worksheets and workshop discussion have been incorporated into this report.

Outstandingly Remarkable Values

The following table summarizes the outstandingly remarkable values for Piru Creek.

Table 3. Summary of outstandingly remarkable values for all river segments

River Value	**Recreational Segment:** *From 0.5 miles downstream of Pyramid Dam at the first bridge crossing to the boundary of the Sespe Wilderness*	**Wild Segment:** *From the boundary of the Sespe Wilderness to the boundary between Los Angeles and Ventura Counties*
Geology	**Yes**	**Yes**
Fisheries	**Yes**	**Yes**
Wildlife	Yes	Yes
Scenery	No	**Yes**
Recreation	No	**Yes**
Historic and Cultural	No	No
Botany	No	No

Resource Descriptions and Determinations

Scenery

Baseline and Present Conditions

The recreational segment is characterized by typical landscapes of steep, chaparral covered slopes intermixed with foothill and valley areas of oak woodland and grassland. Strips of cottonwood and willow are adjacent to the relatively straight and confined stream channel. Two valleys in the river corridor, Frenchman's Flat and Piru Ponds, turn green for 1- 2 months in the spring as annual grasses grow, but otherwise the area lacks diversity of views or seasonal variation. The segment is appropriately classified as recreational, as it includes foreground views of a major dam and Interstate 5, and the Golden State Highway directly in the river corridor. Lesser development includes the Frenchman's Flat Trailhead and day use area, with restrooms, picnic tables, and garbage dumpsters, and access roads. The recreational segment is classified per the Forest Service scenic attractiveness classes as class B, "Typical."

The wild segment begins when the river enters the Sespe Wilderness. This segment lacks developed features or related sites and sounds, as the topography transitions abruptly from the wider valley of Frenchman's Flat to a narrow, steep canyon with 400-700 feet of elevation relief. Approximately 75 percent of the total wild river segment, and 41 percent of the total WSR corridor, are classified as "Distinctive," or scenic attractiveness class A, containing the highest combination of landform, water, rock and vegetation.

Since river designation in 2009, several new features have been constructed in the recreational segment, including a new restroom at Frenchman's Flat and a new flood warning system consisting of several small, fenced enclosures around 10-foot poles along the Golden State Highway. In 2018-2019 the Department of Water Resources installed a flood warning system, including a series of flood danger signs along the recreational segment of Piru Creek. These signs are relatively small, were designed to match surrounding colors, and have not substantially changed scenery conditions since designation.

Evaluation Criteria

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed, may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.

Region of Comparison

For scenery, the region of comparison is the Southern California Mountain and Valley Ecological Section, based on USDA Forest Service's National Hierarchical Framework of Ecological Units[1].

Determination

Scenery is not an outstandingly remarkable value for the recreational section of Piru Creek. The scenery in this section has very typical landscape elements within the region of comparison. The landforms, presence and amount of water, and variety of vegetation are not unique, exemplary, or rare. The high level of development in the recreational segment also limits the overall scenic quality.

Scenery is an outstandingly remarkable value for the wild section of Piru Creek. The presence of water in such relatively dry, steep topography does offer high scenic attractiveness, in the wild segment of Piru Creek. The rock formations along the canyon in the wild segment are rare and visually interesting due to a mix of color, textures, and landforms. The striking beauty of Piru Creek WSR's wild segment is well documented in blogs, guidebooks, social media, and user interviews.

Recreation

Baseline and Present Conditions

The recreational segment of Piru Creek contains the Frenchman's Flat Picnic Area and the Golden State Highway, an approximately 2-mile paved road converted to non-motorized trail, that provides the primary access to Piru Creek. Along this route, the primary uses are bicycling, swimming and water play, dispersed picnicking, dispersed camping along the creek at Frenchman's Flat, and catch and release fishing for wild (non-hatchery) trout. Dispersed overnight camping opportunities are concentrated along the river for about one quarter mile north of Frenchman's Flat.

Use levels in this segment are high and typically exceed the parking capacity of 110 cars during the high use periods of April to November. The climate is mild to temperate, typical of Southern California, and allows for year-round use of most reaches of Piru Creek. An estimated 90 percent of visitors are from the local area. The recreation experience is similar to other major rivers in the region with developed sites and road or trail access along them, such as West Fork San Gabriel and Santa Ynez Rivers, and Manzana and Lytle Creeks. A lack of shade and high temperatures in the summer limit hiking use along the Golden State Highway; some hiking occurs on user developed trails south of Frenchman's Flat, until the canyon narrows substantially just upstream of the Sespe Wilderness and wild segment of Piru Creek. The recreational segment of Piru Creek is a catch and release stream for angling under California Department of Fish and Wildlife (CDFW) Regulations.

The wild segment, located entirely within the Sespe Wilderness, does not contain any National Forest System trails and, in some sections, the river flows through a narrow canyon where travel is necessarily

[1] USDA Forest Service Ecological Sections https://databasin.org/datasets/9ebae13e920c47f3ab19a4586ad2152f

constrained to directly within Piru Creek. Non-technical canyoneering is known to occur within Piru Gorge and the corridor provides access to a more technical route in Ruby Canyon. The wild segment offers opportunities for solitude and primitive recreation that are typical of most wilderness areas including fishing, dispersed camping, and backpacking opportunities. Use levels are very low.

Advanced-level whitewater boating occurs in this segment, featuring Class IV rapids. Boating opportunities are limited to those instances, typically during very wet winters, when Pyramid Dam can release high enough volumes to accommodate boaters (minimum of approx. 200-300 cfs). During the period from 2007 through 2017, there were four years where there were no opportunities for boating, while in other years, as many as 16 boating days were possible (CDWR, 2019d). Even in those instances, boaters report needing to portage some sections.

The California State Water Board adopted an amendment to the Water Quality Certification issued by the State Water Board (SWB) for the relicensing of Pyramid Dam on March 14, 2023. This amendment may increase opportunities for whitewater boating for up to six weekends in the winter season by controlling the timing and rate of flow releases from Pyramid Dam.

Some changes have occurred within the corridor since designation. A double-sided vault restroom was installed at Frenchman's Flat in 2018. Drought years between 2012-2016 resulted in reduced releases from Pyramid Dam. The COVID-19 pandemic in 2020 substantially increased visitation at all National Forests in the region. In 2018-2019 the Department of Water Resources installed a flood warning system, and a series of flood danger signs along the recreational segment of Piru Creek.

California Department of Fish and Wildlife (CDFW) ceased stocking rainbow trout around 2008 in Piru Creek to avoid potential impacts to endangered species. As a result, the recreational fishing opportunities have diminished, although trout do persist in Piru Creek WSR. Angler survey data collected for CDFW by the Fisheries Resource Volunteer Group shows a range of 0.4 – 1.9 fish caught per hour. There are a set of catch and release regulations for approximately 1 mile of Piru Creek recreational segment that prohibit any take of fish, from the start of the WSR 300 yards below Pyramid Dam to the falls upstream approximately a half mile of the Highway 99 bridge (CDFW 2024).

Evaluation Criteria

Recreational opportunities are high quality and attract, or have the potential to attract, visitors from throughout or beyond the region of comparison; or the recreational opportunities are unique or rare within the region. River-related recreational opportunities include, but are not limited to, sightseeing, interpretation, wildlife observation, camping, photography, hiking, fishing, hunting, and boating. The river may provide settings for national or regional use or competitive events.

Region of Comparison

The region of comparison is the six counties generally considered to comprise the Metropolitan Southern California Region: Los Angeles, Ventura, Orange, San Bernardino, San Diego, and Riverside Counties. There is an abundance of recreation opportunities provided by local governments. The National Forests in Southern California tend to primarily draw local populations, or from within the region, for recreational opportunities (USDA 2016).

Determination

For the wild segment only, recreation – specifically, whitewater boating as described below – is an outstandingly remarkable value. Changes were made to this analysis adding recreation as an ORV for the wild segment after extensive public engagement, including a stakeholder site visit and additional data

gathered from whitewater boating groups. For the recreational segment, recreational values are not considered outstandingly remarkable; thus, recreation is not an ORV for the recreational segment.

General recreational opportunities are similar to several other rivers in the region of comparison and are not unique or rare. Recreation in Piru Creek's designated segments generally does not attract visitors from outside the region. A variety of other developed day use recreation sites on the Angeles, Los Padres, San Bernadino, and Cleveland National Forests offer opportunities for accessible water play and dispersed recreational access to rivers for the local population within the Metropolitan Southern California region. Fishing success is below average due to lack of stocking. Several rivers in the region of comparison are recognized as California Designated Wild and Heritage Trout Waters, including the upper Piru Creek drainage above Pyramid Lake. The Piru Creek WSR has not been given this special designation for notable fishing opportunities. The catch and release regulations are in effect for approximately 1 out of 7.25 miles of the WSR (CDFW 2024). The majority of Piru Creek WSR provides recreational fishing opportunities similar to a number of other rivers in the region of comparison.

The geologic interpretive uses are primarily academic (see Geology section), though are of interest to other user groups as well and are limited by lack of access to the wild segment of Piru Creek. Dispersed recreation and cross-country travel through the wild section is limited due to topography and offers non-technical canyoneering opportunities comparable to other river canyons throughout the region of comparison.

The potential for whitewater boating is constrained due to flows in a manner similar to other rivers in the semi-arid region of comparison Additional boating opportunities during the winter are likely to result from State Water Project FERC license conditions for flow release, which will provide recreational users greater predictability of suitable flows.

Opportunities for whitewater boating occur on other major rivers in the region of comparison, such as the Santa Clara, San Gabriel, Ventura, and Los Angeles Rivers, and Sespe Creek. However, in the wild segment of Piru Creek, the combination of a remote and wild primitive setting, outstanding scenic combinations of color and landform, easy access from Frenchman's Flat, class IV rapids, and natural flow characteristics augmented by managed releases from FERC license conditions, make whitewater boating opportunities rare and unique within the region of comparison. As indicated by numerous comments including at a stakeholder site visit, Piru Creek regularly draws visitors from throughout the region of comparison, and with implementation of FERC license conditions is likely to draw visitors from outside the region.

In the recreational segment, the scenic values are not present. Vehicle access is not allowed to this segment under the current Angeles Motor Vehicle Use Map and Forest Service travel regulations, and there are not any put in locations for whitewater boaters that are as safe and convenient to access as Frenchman's Flat. There are no class IV rapids in this section. The overall setting and experience are similar to other rivers in the region of comparison, such as the West Fork San Gabriel River. Whitewater boating opportunities in the recreational segment are not rare or unique and lack the potential to draw visitors from throughout and outside of the region of comparison.

Geology

Baseline and Present Conditions

The east-west trending Transverse Ranges include California's highest peaks south of the central Sierra Nevada and the only Precambrian rocks in the coastal mountains of the United States. The Transverse Ranges are a unique geomorphic, stratigraphic, petrologic, and structural belt 400 kilometers long and 100 kilometers wide that is offset by a few tens of kilometers right laterally by the northwest trending San

Andreas fault system. The prominent east-west trend of the Transverse Ranges is unique among the rest of the northwest-southeast trending coastal ranges in California. It has been proposed that they have rotated significantly from their original position. Along the entire mapped length of the San Andreas Fault Zone, from northern California to Mexico, no other such diverse belt of rocks, structure, and geomorphology similar to the Transverse Range Province crosses the zone. In addition, despite their comparatively small area, the Transverse Ranges incorporate a greater spectrum of rock types and structure than any other province in the state. The Transverse Ranges are likely the result of compressional forces along the Big Bend in the San Andreas Fault that itself is a unique geologic feature in North America if not the world.

Piru Creek, below Pyramid Reservoir, flows through scenic tilted layers of sedimentary rocks of the Ridge Basin Group, an inter-montane basin exposing the interrelationships of tectonics and sedimentation, and often the subject of geology field trips by academic and casual interest groups. The Ridge Basin is a prominent, northwest-southeast oriented basin between the San Gabriel Fault to the southwest and the San Andreas Fault to the northeast. The basin developed during a tectonically active period in the late Miocene to early Pliocene (11-5 Ma), during which about 14,000 meters of strata accumulated (Schwartz 2020), which is characterized by one of the world's highest sediment accumulation rates of about 2 meters /1000 years (Link, 1982). The Ridge Basin is the best exposure basin along the San Andreas transform belt and affords an excellent opportunity to observe marine and non-marine facies in a wrench-fault setting.

Accumulated along and displaced by the San Gabriel Fault are coarse gneissic debris, sourced from the Alamo-Frazier Mountain region, and known as the Miocene Violin Breccia. The Violin Breccia along with some other local geological units have been used to restore displacement on the San Gabriel fault, and thereby construct the tectonic history of Ridge Basin (Schwartz 2020).

About three and half miles south of Pyramid Dam, Piru Creek turns back to the west and crosses the San Gabriel Fault zone into Precambrian gneiss (metamorphic) and Mesozoic to Precambrian granitic (igneous) and gneissic rocks.

Piru Creek winds its way through tight bends in a 1,500- to 2,000-foot-deep canyon, displaying active debris slides on canyon walls and deep pools and carved granitic boulders in its upper reaches.

The San Gabriel and other nearby faults are interpreted by Dr. John C. Crowell, Professor Emeritus of the University of California, as strands of the San Andreas Fault system within this splintery boundary region between two giant tectonic plates, the North American Plate to the northeast and the Pacific Plate to the west. Where the San Gabriel Fault crosses lower Piru Creek, it separates 4- to 5-million-year-old (young) terrestrial sedimentary rocks from +/- 600-million-year-old Precambrian metamorphosed gneiss, exposing a dramatic change in rock type and geomorphic form (Crowell, 1952).

There is a close relationship between the geological/geomorphological values and the river. On one hand, the specific geological units along this proposed segment of Piru Creek are contributing directly to the spectacular geomorphic features (incised gorges and deep pools) of the creek. On the other hand, the fact that the river is flowing in its current path is contributing to the erosional processes (active debris slides) along the creek, along tribute drainages, and along the steep slopes of the river itself. In addition, this incised creek has been deepening over millions of years, exposing furthermore the unique geological units along this river.

Evaluation Criteria

The river, or the area within the river corridor, contains one or more examples of a geologic feature, process, or phenomenon that is unique or rare within the region of comparison. The feature(s) may be in an unusually active stage of development, represent a "textbook" example, and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial, or other geologic structures).

Region of Comparison

The geologic features of Piru Creek were found to be unique within North America, as well as within the State of California and within the Transverse Range, which itself is a unique east-west mountain range within the state.

Determination

Geology is an outstandingly remarkable value for both segments of Piru Creek. Piru Creek flows within unique rock formations and features created by the San Gabriel Fault. Scenic tilted layers of sedimentary rocks exist in addition to faults and rock formations with features crucial to the understanding of geological formation on the west coast of North America.

Within the recreational segment, the sedimentary rocks, just below Pyramid Lake are part of the Ridge Basin Group and display a sequence of terrestrial and marine sedimentary rocks, from the late Miocene through early Pliocene Epochs (Crowell 1954, 1982; Dibblee 1996). These sedimentary rocks are important to the study of the development of the Ridge Basin that coincided with movement on the San Gabriel Fault. These rocks provide critical information about the movement history of the unique Transverse Ranges and are considered to be outstandingly remarkable.

The basement rocks that outcrop in the wild segment on the west side of the San Gabriel Fault are considered to be outstandingly remarkable. These rocks are gneisses and migmatites that are banded and form scenic outcrops and boulders along and in the creek. Geologically these rocks are important because exposures of basement rocks provide important clues to this less well-understood portion of North America's tectonic history.

The active San Gabriel Fault is one of several important structural features greatly influencing the geologic exposures and geomorphic landforms in southern California. The transition from young sedimentary rocks (ridge-basin Group) to old basement rocks along with the clues each one of these rock types provides in the study and understanding of the San Gabriel and San Andreas faults are important geologic features within the corridor. In addition to these unique features, the understanding of the development of the west coast of North America and the geomorphic features as deep canyons and pools along the corridor meet the criteria of outstandingly remarkable.

Figure 2 - Example of the outstandingly remarkable geology from Recreational section of Piru Creek WSR. (USDA Forest Service photo by Jonathan Schwartz).

Fisheries

Baseline and Present Conditions

Native fish species such as resident rainbow trout (*Oncorhynchus mykiss*), and arroyo chub (*Gila orcuttii*), as well as non-native prickly sculpin (*Cottus asper)* inhabit the designated segments of Piru Creek. A species of sucker has been documented in the wild section of Piru Creek as recently as 2018 (CDWR and LA DWP 2019). Authors of the study were not able to identify these fish to species. The arroyo chub, a Forest Service sensitive species, was introduced into Piru Creek and now is mostly extirpated from its native rivers in Southern California (Moyle, 2002). Although resident rainbow trout in the designated segments of Piru Creek cannot reach the ocean due to a fish passage barrier at Santa Felicia Dam, they are >99.9% genetically identical to the federally endangered ocean-going Southern California steelhead (*Oncorhynchus mykiss)* found below fish passage barriers within the Santa Clara watershed (Adabia-Cardoso et al. 2016). For example, freshwater resident rainbow trout that have completed their life history cycle entirely in freshwater can produce anadromous progeny that emigrate to the ocean. Conversely, steelhead that migrate from the ocean may produce progeny which complete their entire life history cycle in freshwater (Boughton et al. 2006, Garza and Clemento 2007, Christie et al. 2011, NMFS 2012). The two forms can interbreed and contribute to the genetic pool of the population. Nearly half of the resident rainbow trout surveyed in Piru Creek have been found to contain the genetic marker for anadromy (Pearse et al., 2014).

Water releases from Pyramid to Lake Piru have significantly modified the natural dynamics of stream flow and sediment transport within the channel (see Free Flow section), although the requirement that

water releases match the natural inflow has restored some natural function. Several non-native species have also been introduced to Piru Creek, to the detriment of native species; the sources of these introductions is not known. Non-native species present in Piru Creek include but are not limited to bullfrog (*Lithobates catesbeianus*), small and large-mouth bass (*Micropterus dolomieu* and *Micropterus salmoide*), black bullhead catfish (*Ameiurus melas*), green sunfish (*Lepomis cyanellus*), bluegill (*Lepomis macrochirus*), and brown trout (*Salmo trutta*).

The unnatural supplemental summer flows that were released prior to the 2005 amendment of FERC license Article 52 were required to maintain a trout fishery below the dam. Historically, those initial fluctuating stream releases were recommended by USFS and CDFW and were based on air temperatures and not based on the natural hydrograph of Piru Creek. The initial stream releases were incorporated into Exhibit S (19822) of FERC license P-2426 and were later amended in 1993 to provide constant summer flows at the recommendation of CDFW. In 2005, Pyramid Dam's license requirements (Articles 51 and 52.26) to provide minimum flows for rainbow trout were waived to favor a more natural flow regime that would limit impacts to the federally endangered arroyo toad (*Anaxyrus californicus*). In granting the waiver, FERC acknowledged that lower water conditions in the summer would negatively affect rainbow trout and "may eliminate the majority of trout occurring in middle Piru Creek between July and October" (FERC, 2005). However, the modified flow regime was found to provide benefits by controlling non-native plant and animal species as well as avoid incidental take of the arroyo toad, and the wild rainbow trout have persisted in Piru Creek

The fishery in the recreational segment of Piru Creek is heavily impacted by the presence of infrastructure including a nonfunctioning USGS stream gauging station and concrete weir, roads, and high recreational use. Decadent riparian vegetation predominates along this section of the river corridor, due to dam flow operations, and invasive plants are present in areas with high levels of human use and resulting ground disturbance. Vegetation in the surrounding watershed was impacted by the 2006 Day Fire. The channel spanning weir at the gauging station impedes the free-flowing nature of the river and is likely a fish passage barrier during all flows. Additionally, user-created dams can also be temporary fish passage barriers but likely only at low flows. In most cases, these types of dams are considered a partial barrier because they may only be a barrier to certain life stages, such as juveniles. While development and impacts in the recreational section of Piru Creek limit fish habitat quality, the rainbow trout population is present in both the recreation and wild sections. This population of resident rainbow trout with native ancestry is important to the recovery of Southern California steelhead (Adabia-Cardoso et al. 2016).

The wild segment of Piru Creek exhibits natural fish habitat, with virtually no infrastructure. The segment contains a variety of mesohabitats typical of lower gradient streams, including deep pools, runs, glides, and low gradient riffles. The steep and narrow canyon walls provide shade, buffering the effects of warm temperatures and low water in the summer months. The wild segment, however, is still influenced by the presence of dams above and below, as well as multiple non-native species that prey on or are otherwise known to be harmful to native fish stocks. The state manages and is responsible for enforcing state fishing regulations protecting Southern California steelhead.

Evaluation Criteria

Fish values may be judged on the relative merits of either fish populations or habitat, or a combination of these river-related conditions.

- **Populations**. The river is nationally or regionally an important producer of resident and/or anadromous fish species. Diversity of fish species or the presence of wild stocks and/or federal or

state-listed, or candidate threatened, endangered, or species of conservation concern are of particular significance.

- **Habitat**. The river provides uniquely diverse or high-quality habitat for fish species indigenous to the region of comparison. Exemplary habitat for wild stocks and/or federal or state-listed or candidate threatened, endangered, or species of conservation concern is of particular significance.

Region of Comparison

For fishery resources, the region of comparison is the Southern California Mountain and Valley Ecological Section, based on USDA Forest Service's National Hierarchical Framework of Ecological Units.

Determination

Fisheries in the wild segment of Piru Creek are an outstandingly remarkable value based on the exceptional habitat and population values for resident rainbow trout, including a diversity of lower gradient stream mesohabitats and a lack of infrastructure and development. The steep canyon walls provide shade during hot summer months and may buffer the impacts of increasing temperatures. Due to the relative merits of this high-quality habitat within the region of comparison, the fisheries value is an outstandingly remarkable value in the wild segment of Piru Creek. The population of resident rainbow trout with native ancestry may also be important resources to the recovery of Southern California steelhead (Adabia-Cardoso et al. 2016). While the development in the recreational section of Piru Creek limits fish habitat quality, the rainbow trout population is present in both sections, making fisheries an outstandingly remarkable value in both segments of Piru Creek.

Wildlife

Baseline and Present Conditions

The natural dynamics of stream flow and sediment transport within Piru Creek have been modified significantly. Nonnative species include but are not limited to bullfrog, small and large-mouth bass, black bullhead catfish, and green sunfish. In 2005, the DWR began releasing water from Pyramid Dam matched to reservoir inflows, to more closely mimic natural hydrologic conditions. The modification was intended to benefit arroyo toad populations and habitat.

The wild segment of Piru Creek is relatively narrow with steep canyon walls bordering either side of the creek. The narrow riparian habitat corridor consists mostly of scattered stands of valley oak and sycamore with thickets of arroyo willow (*Salix lasiolepis*) and mulefat (*Baccharis salicifolia*) bordering the stream margins. The two-striped garter snake (*Thamnophis hamondii),* a Forest Service sensitive species, is known to occupy Piru Creek WSR.

In 2011 the US Fish and Wildlife Service (USFWS) published a Final Critical Habitat Designation Rule for the arroyo toad in the Federal Register. This listing noted that the change in water releases from Pyramid Dam have likely benefitted arroyo toad habitat throughout Piru Creek, but the arroyo toad occupied and designated critical habitats do not occur within Piru Creek WSR. Currently, occupied and designated critical habitats are located approximately 0.5 miles downstream of the Piru Creek WSR (76 FR 7246). However, due to potential increase of suitable habitat from water releases from Pyramid Dam, the Piru Creek WSR could provide essential habitat linkages between known occupied areas and assist in the survival and expansion of the species.

Critical habitat was designated for the southwestern willow flycatcher (*Empidonax trailii extimus)* in 2013. There are 70 acres of critical habitat within Piru Creek Wild and Scenic River. The final critical habitat designation included 208,973 total acres, 38,564 of which are in the region of comparison, the Southern California Mountain and Valley Ecological Section. This designated critical habitat provides important linkages to habitats throughout the nation and region. The southwestern willow flycatcher breeds in dense vegetation along rivers, streams, or other wetlands, which are found throughout the species designated critical habitat in the Piru Creek corridor (FWS 2012). No recent surveys have been conducted along the Piru Creek corridor to establish occupancy within the designated critical habitat. Throughout the Piru Creek corridor, there is riparian vegetation that provides habitat for riparian-reliant species, such as the Federally Endangered least Bell's vireo (*Vireo bellii pusillus*). These riparian zones can provide essential foraging and stop over locations during migration. However, there is no designated critical habitat and are no known nesting or roosting least Bell's vireo within the Piru Creek WSR.

The recreational and wild segments of Piru Creek contain designated critical habitat for the California condor (*Gymnogyps californianus*) with multiple active roosting and perching sites along the wild section of the river corridor, verified with telemetry data between 2022 and 2024. Additionally, habitat along the river corridor has the potential to support nesting pairs with suitable habitat demonstrating steep canyon walls, ridgelines, rocky outcrops, and access to water. The CA Condor population is unique within the region due to a history of captive breeding and reintroduction to avoid extinction, and concentrated roost and perching sites in the wild section of Piru Creek WSR.

The southwestern pond turtle (*Actinemys marmorata pallida)*, a federally proposed species is known to occur within the recreational section of Piru Creek. Currently, due to the proposed status of this species, no critical habitat has been designated yet and no surveys have been conducted to determine occupancy throughout the forests. However, presence of this species within the Piru Creek WSR corridor demonstrates that suitable habitat is present.

The federally endangered California red-legged frog (*Rana aurora draytonji)* occurs downstream (approximately 0.2 miles) of and not within the designated portion of Piru Creek (CDWR, 2019b).

Evaluation Criteria

Wildlife values may be judged on the relative merits of either terrestrial or aquatic wildlife populations or habitat, or a combination of these conditions.

- **Habitat.** The river, or area within the river corridor, provides uniquely diverse or high-quality habitat for wildlife of national or regional significance, and/or may provide unique habitat or a critical link in habitat conditions for federal or state-listed or candidate threatened, endangered species, or species of conservation concern. Contiguous habitat conditions are such that the biological needs of the species are met.
- **Populations.** The river, or area within the river corridor, contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species diversity, species considered to be unique, and/or populations of federal or state-listed or candidate threatened or endangered species, or species of conservation concern.

Region of Comparison

For wildlife resources, the region of comparison is the Southern California Mountain and Valley Ecological Section, based on USDA Forest Service's National Hierarchical Framework of Ecological Units.

Determination

Wildlife within Piru Creek WSR, in both the recreation and wild segments, is an outstandingly remarkable value based on exceptional connective habitat, including a diversity of terrestrial and riparian habitats, a lack of infrastructure and development (in the wild segment), and the presence of multiple TES species within and surrounding the WSR. This area encompasses designated critical habitat for the southwestern willow flycatcher and California condor. Due to its Federal status as a critically endangered species due to low population numbers across its range, the California condor is considered a rare and unique species population with regional and national significance. The Piru Creek WSR provides valuable habitat including steep rocky canyons and ridgelines for roosting and nesting with access to water. Additionally, plentiful riparian habitat with sandy banks and thick vegetation provides suitable habitat for the southwest willow flycatcher, southwestern pond turtle, and two-lined garter snake. While no occupancy is known, due to lack of survey data, for the Arroyo toad, California Red-legged frog, and least Bell's vireo, there is suitable habitat within the river corridor that can support these species along the wild segment of the WSR. The proximity of the WSR to designated critical habitat for Arroyo toad and California red-legged frog may allow for the species to expand into this protected area. Also, steep canyon walls provide shade during hot summer months which may buffer the impacts of increasing temperatures. While the development in the recreational section of Piru Creek limits southwestern pond turtle habitat quality, the Piru Creek WSR contains high-quality habitat throughout. Therefore, the presence of high-quality habitat for a variety of Threatened, Endangered, Proposed, and Sensitive species and the known occupancy of many of these species makes Wildlife an outstanding remarkable value in both segments of Piru Creek.

Historic and Cultural Resources

Baseline and Present Conditions

Sizeable portions of the Piru Creek corridor have been surveyed for heritage resources. The creek lies within an area known to have been occupied during the prehistoric, protohistoric and historic periods. However, unlike the upper Piru Creek segments (above Pyramid Lake), the designated segments lack the presence of sites that have the potential to contribute to local and regional understanding of both native and historic history. Fieldwork by McKenna et al. (1992) found no evidence of significant historic remains and one small prehistoric habitation site within the designated segments. Given the geomorphology of this corridor of Piru Creek, absence of such sites is not a surprise. Much of this lower segment winds its way through tight bends in 1,500 to 2,000 foot deep canyons, displaying active debris slides on canyon walls and deep pools and carved granitic boulders in its upper reaches.

Historic maps for the area illustrate the extent of the rough terrain. An 1880 map of the area shows a road leading through the Piru Creek area, north from a portion of Rancho Temescal and identifiable as far north as the current location of the Apiary Campground. No structures or habitation sites are reported on this map. This map shows a portion of a "trail to Fort Tejon" along Piru Creek, indicating this was a trafficked right-of-way for at least two miles along the creek below the spillway.

There have been no substantial changes in information or interpretation of cultural resource values within the study area since the 2006 Forest Plan Eligibility Study or the designation of the river.

Evaluation Criteria

The river, or area within the river corridor, contains important evidence of occupation or use by humans. Sites may have national or regional importance for interpreting history or prehistory.

- **History.** Site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare or one-of-a-kind in the region. A historic site or feature, in most cases, is 50 years old or older.
- **Pre-history**. Sites may have unique or rare characteristics or exemplary human interest value; represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups, or may have been used for rare sacred purposes.

Region of Comparison

In determining whether there was an outstandingly remarkable value for the designated segments we compared to similar rivers nearby within the Angeles and Los Padres National Forests. In particular, in comparison to the upper segments of Piru Creek, which contain village locations, extensive lithic scatters, and rock shelters, including three historic properties that qualify for the National Register of Historic places, the designated segments of Piru Creek do not contain archeological resources of outstanding value. Input related to archaeological and tribal resources, (i.e., sacred sites, traditional cultural properties, etc.) was requested from federally recognized Indian tribes, in addition to state recognized local Native American groups with ascribed cultural affiliation with the designated Piru Creek segments, for information on any rare, unique, or exemplary cultural or tribal resources within these river corridors that should be considered in our river values assessment. No tribal resources or sacred sites were identified as a result of this outreach effort, however, the Fernandeño-Tataviam Band of Mission Indians has requested to continue their participation during any future management plan development, particularly in regards to any identified exceptional values that may benefit from a tribal perspective.

Determination

The historic and pre-historic sites and features recorded within the designated segments are common in the local area and region, and as such, they are not rare or unique or have national or regional importance for interpreting prehistory. There are no cultural resources present within the lower Piru Creek that offer outstandingly remarkable values.

Botany

Baseline and Present Conditions

The botanical resources of the recreational segment of Piru Creek are well known due to the creek's proximity to roads and trails and the inclusion of the study corridor in other project analyses; however, no systematic effort has been made to inventory the botanical resources found in the study corridor. There are no known occurrences of endangered, threatened, proposed, candidate, or sensitive plant species within one-quarter mile of Piru Creek. There are a number of occurrences of sensitive plant species in the Piru Creek watershed but these populations all occur more than one-half mile from the creek.

Botanical values were reviewed across the entire Piru Creek WSR corridor (approximately ¼ mile from stream centerline). The botanical resources directly in and adjacent to the stream are river related, many of them are considered vital components of a riparian (water dependent) ecosystem. Upland vegetation is not as directly related to the WSR, although there can be ecological factors that indirectly relate upland vegetation to the presence of free-flowing water.

For botanical resources, detailed field inventories and studies associated with FERC re-licensing for Pyramid Dam were completed only for the immediate footprint of the licensed infrastructure, and do not overlap with the Piru Creek WSR. While there have not been detailed field surveys conducted within Piru

Creek WSR, the data sources reviewed represent the best available information. A species-specific habitat review was not conducted, instead, the detailed species accounts from the forest plan formed a baseline.

The primary recent change in the vegetative condition is from the effects of the Day Fire in 2006.

The National Forest Management Act and Renewable Resources and Planning Act provides authority and direction for the Forest Service to make special designations of unique, rare, or high interest resources within the Agency's Land Management Plans, which all National Forests are required to prepare. The two most common of these designations for botanical resources are Special Interest Area, and Research Natural Area. Neither of these special designations for Piru Creek were considered, recommended, or adopted in either the 1987 or 2006 Angeles National Forest Land Management Plans, or subsequent amendments.

Region of Comparison

For botanical resources, the region of comparison is the Southern California Mountain and Valley Ecological Section, based on USDA Forest Service's National Hierarchical Framework of Ecological Units.

Determination

Botanical values are not considered to be outstandingly remarkable. A review of the best available information did not indicate any botanical values that are unique, rare, or otherwise meet the criteria for outstandingly remarkable values. The Forest Service existing vegetation dataset shows that the various habitat and vegetation types present within Piru Creek WSR are typical and widespread across the region of comparison, occurring along many other rivers.

Water Quality and Free Flow

As defined in the Wild and Scenic Rivers Act, water quality and free flow are values to be protected and enhanced for all designated rivers. This report documents and updates the baseline and current condition for water quality and free flow, including federally reserved water rights.

Water Quality

According to the California State Water Resources Control Board (CWRCB), the designated beneficial uses of water for the recreational and wild segments of Piru Creek are agricultural supply, cold freshwater habitat, municipal and domestic supply, non-contact water recreation, spawning, reproduction, and/or early development, warm freshwater habitat, and water contact recreation.

Both portions of the river segments are listed in the 2018 Water Quality Integrated Report (CWRCB, 2018) as an impaired waterbody (Class 5) with a Total Maximum Daily Load (TMDL) needed for chloride, pH, and toxicity. The California Water Quality Board for the Los Angeles Region is responsible for TMDL development. A TMDL analysis is currently under development for both chloride and pH that was due to be completed in 2019 but is not available at the time of this report. A TMDL analysis for toxicity is scheduled to be completed in 2027.

The Watershed Condition Class (WCC) rating for the Fish Creek-Piru Creek HUC12 watershed is listed as functioning at risk with both the water quality and water quantity metrics rated as poor. The water quantity metric is listed as poor due to the artificial impoundments of natural streamflow from Pyramid Lake.

The recreation segment has very gentle slopes averaging less than ten percent. Solar radiation in this segment is higher than average, providing a cooling effect to visitors from evapotranspiration of the cold waters discharged from Pyramid Lake. Solar radiation in the wild segment is much lower than average, reducing evapotranspiration rates and maintaining cooler surface stream temperatures, which are beneficial to the local fish and wildlife species.

Free Flow

Section 16b of the Wild and Scenic Rivers Act defines "free flowing" rivers as any river or section of river existing or flowing in natural condition without impoundment, diversion, straightening, rip rapping, or other modification of the waterway. There are no impoundments within the designated segments of Piru Creek, thus the river is considered free flowing. Pyramid Dam impounds Piru Creek directly upstream of the designated segment. Pyramid Dam was constructed by the California Department of Water Resources in the 1960s and completed in 1973 as part of the State Water Project and has a storage capacity of 222,000 acre-feet of water. California Department of Water Resources controls releases from Pyramid Lake under a FERC license. These releases control the downstream flow of Piru Creek. The license Article 52, as amended in 2009 after a temporary waiver in 2005, requires the licensees to match outflows from Pyramid Lake to natural inflows to Pyramid Lake, to the extent feasible for operations and safety. This flow regime is to avoid impacts to the federally endangered arroyo toad. The license allows for limited exceptions for emergency flood protection and other testing, and delivery of water to United Water Conservation District Lake Piru in the winter months (November to February) when flows would not interfere with arroyo toad reproduction.

A review of the streamflow data (1988 to present) from USGS Stream Gauge 1109525 – Piru Creek below Pyramid Lake near Gorman, CA shows high fluctuations in discharge from a high of 779.5 cubic feet per second (cfs) recorded in February 1998 to a low of 1.8 cfs recorded in July 2018. The discharge values cited in this statement are monthly mean values from the period of record. Actual daily and instantaneous discharge values are much higher for this gage. Summer discharge averaged 26.1 cfs for the month of July for the period of 1989 to 2006. Summer discharge averaged 4.8 cfs for the month of July for the period of 2007 to present. In approving the Article 52 operating guidelines in 2009, FERC recognized that the unnatural supplemental summer releases were not protective of arroyo toads. The intent of the modifications to Article 52 is to have operational releases reflect the natural hydrograph for protection of downstream resources and thus the current average summer discharge is lower than the values recorded from 1989 to 2006.

Summer streamflow is augmented upwards of 0.8 cfs above the dam discharges in the recreation river segment from streamflow from tributaries into Piru Creek into the wild river segment.

Recreational Segment

A portion of the Golden State Highway was built through the recreation segment between 1929 and 1933 to provide a safer three lane road through the Tejon Pass to Gorman, California. Construction of this road bisected portions of the stream as evidenced in the 2018 NAIP imagery. Portions of the Golden State Highway north of this river segment are submerged under Pyramid Lake.

Wild Segment

The wild segment is composed of a natural landscape with steep gradients, including slopes over 100 percent. The only major disturbances in modern times were caused by the 1928 Didge Fire #96 and the 2006 Day Fire. These two wildfire events would have accelerated erosion of up to three to five years based on soil burn severity. Erosion rates should be back down to normal ranges.

Federally Reserved Water Rights

Section 13(c) of the Wild and Scenic Rivers Act expressly reserves the quantity of water necessary to achieve the Act's purposes for each WSR designation, unless specified otherwise. As a result, Piru Creek WSR is entitled to protection by a federal reserved water right that was created when Congress designated the river. The federal reserved water right only protects the portion of Piru Creek in the WSR corridor and does not extend to downstream locations. The federal reserved water right protects the flows necessary to support the ORVs, which include fisheries, wildlife, and geology in both segments and scenery and recreation in the wild segment.

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Appendix B: User Capacity Analysis for Piru Creek Wild and Scenic River Corridor

USER CAPACITY ANALYSIS FOR PIRU CREEK WILD AND SCENIC RIVER CORRIDOR

COMPREHENSIVE RIVER MANAGEMENT PLANNING FOR THE ANGELES AND LOS PADRES NATIONAL FORESTS

Submitted to:
VHB
351 McLaws Circle, Suite 3
Williamsburg, VA 23185

Prepared by:
Steve Lawson
Jeff Marion
Annie Engen
Abbie Larkin
Anna Laura Harmjanz

DJ&A, P.C.
1526 Cole Boulevard
Suite 370
Lakewood, CO 80401

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User Capacity Analysis for Piru Creek Wild and Scenic River Corridor

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Appendix A — Recreation Site Assessment Methods

Introduction

The US Forest Service (USFS) is working with VHB and Catamount Consulting to develop a comprehensive river management plan (CRMP) for Piru Creek, designated under the Wild and Scenic Rivers Act in 2009. DJ&A and Virginia Tech, working together with Catamount Consulting as subcontractors, completed data collection and analysis to help USFS establish current recreation use conditions, estimate user capacities, and specify management triggers and adaptive management strategies required for the plan.

The purpose of this report is to present the framework and methods we used and the results, to help USFS characterize current recreation use conditions, estimate numeric user capacities, and develop long-term monitoring and adaptive management strategies for protecting and enhancing river values for Piru Creek WSR. In the remainder of this introduction section, we describe the geographic setting of the river corridor, provide information about the regulatory requirements for our work, and explain the concept and established framework we applied to complete our work.

Following the introduction, we provide more detailed information about the river corridor and the analysis areas into which we organized it for recreation use and user capacity analysis. We provide information about the recreation use setting and the river values that are potentially affected by visitor use in Piru Creek WSR. We provide a description and rationale for our approach and methods to help USFS characterize current recreation use conditions and estimate user capacities for each analysis area. We then present results of our analysis, including statistical summaries of current recreation use conditions, estimates of numeric user capacities, social and resource indicators, and corresponding management triggers and thresholds, monitoring protocols, and adaptive management actions.

Background

Geographic Setting

Located in Los Angeles County, California, Piru Creek drains the rugged and remote Sespe Wilderness and flows into the Santa Clara River (Figure 1). In 2009, Congress designated 7.25 miles of Piru Creek on the Angeles and Los Padres National Forests as a Wild and Scenic River (WSR), with 3 miles classified as recreational and 4.25 miles classified as wild. The recreational segment of Piru Creek WSR is in the Angeles National Forest, Mojave/Los Angeles Gateway Ranger District. It begins one-half mile downstream of Pyramid Lake Dam at the first bridge crossing and continues downstream to the boundary of the Sespe Wilderness. The wild segment is located within Los Padres National Forest, Mount Pinos Ranger District where it flows from the Sespe Wilderness boundary to the boundary between Los Angeles and Ventura counties (2009 Omnibus Act).

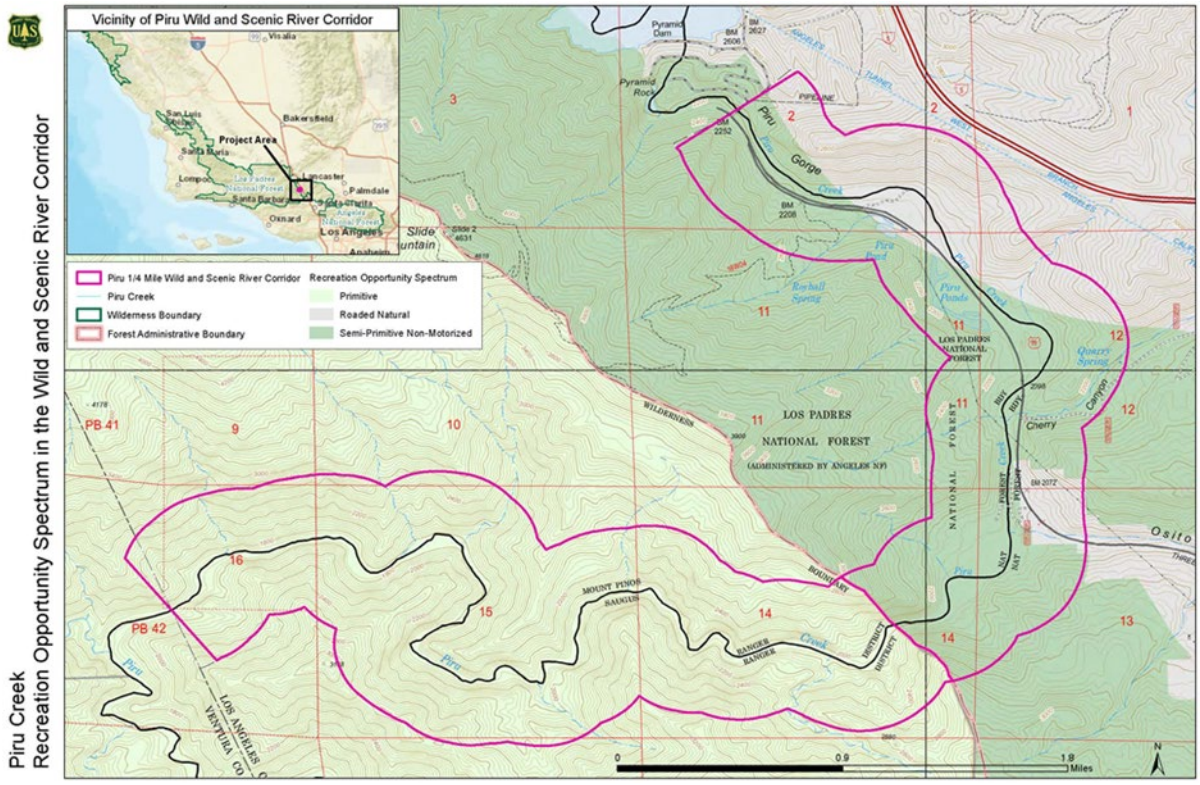

Figure 1. Piru Creek WSR Geographic Setting

Regulatory Requirements

The Wild and Scenic Rivers Act ("the Act") was signed into law in 1968 (Wild and Scenic Rivers Act, Public Law 90-542). The Act protects the free flowing waters of many of the nation's most spectacular rivers, and safeguards the special character of these rivers while also recognizing the potential for appropriate use and development. The Act strives to balance river development with permanent protection for the country's most outstanding free-flowing rivers.

The Act requires the identification of user capacities and the development of management strategies to manage use within those capacities (IVUMC, 2016a). The Wild and Scenic Rivers Act, Section 3(d)(1) states:

> *…the Federal agency charged with the administration of each component of the National Wild and Scenic Rivers System shall prepare a comprehensive management plan for such river segment to provide for the protection of the river values. The plan shall address resource protection, development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of this Act.*

Section 3(d)(1) of the Act requires that river managers address user capacities in CRMPs even when use levels are low and do not currently threaten river values or the established desired conditions for those values.

The Act does not define user capacities or prescribe a particular approach to address user capacities in CRMPs. However, more recent federal court rulings have directed that agencies must specify numeric user capacities to define the maximum number of people that can be accommodated in a designated river area without adversely impacting river values (IVUMC, 2016b).

User Capacity Framework, Concepts, and Approach

Framework

Decisions about user capacities for WSRs can be challenging. Relationships between the types and amounts of recreation use in a river corridor and impacts to river resources and values are complex. For example, relatively high levels of recreation use can be sustained with minimal resource impacts, particularly where use is concentrated on sustainably developed trail treads, forest roads, campsites, and other durable surfaces. At the same time, consequential impacts to resources can occur at very low levels of visitor use, depending on weather, terrain, visitor behavior, and other factors not directly related to the types or amounts of recreation use (Marion et al., 2016).

The Interagency Wild and Scenic Rivers Coordinating Council (IWSRCC) developed guidance and a framework to help address user capacities for WSRs (IWSRCC, 2018). The IWSRCC framework is adapted specifically to the context of WSRs from the Interagency Visitor Use Management Council's Framework (IVUMF) for managing visitor use and addressing user capacity on federally managed lands and waters. The IVUMF has been developed and adopted together by all the primary federal land management agencies as the "gold standard" for addressing user capacities. The IWSRCC framework specifies the following set of nine steps to provide a legally defensible, systematic, and transparent process for determining numeric user capacities according to the legal requirements of the Act:

Step 1. Describe the baseline and current conditions and uses for the WSR

- Identify baseline conditions. Baseline conditions are the conditions which were present at the time of river designation.
- Describe the current amounts and types of use and the current management direction.

Step 2. Identify desired conditions for river values and classifications

- Integrate visitor use, other public use, and administrative uses into desired conditions.
- Take into account the WSR classification as wild, scenic, or recreational.
- Divide the WSR into relevant analysis areas.
- Identify the need for action by comparing existing and desired conditions.

Step 3. Identify the kinds of use that the WSR corridor can accommodate

- Tie the kinds of public uses to the facilities that support those uses.

Step 4. Identify measurable indicators for desired conditions

- Indicators are specific resource or social attributes that can be measured to track changes in conditions associated with human use.

Step 5. Establish thresholds for each indicator

- Thresholds are the highest levels of indicators that prevent degradation of a river's baseline condition.

Step 6. Identify triggers that elicit management response

- A trigger is the predetermined point at which changes in an indicator require a management response to ensure that the threshold for that condition is not crossed.
- Where appropriate, more than one trigger may be set to identify levels where action is needed to prevent further decline or to reverse decline.

Step 7. Identify management actions to take when triggers are reached

- Tie management actions to triggers that prevent degradation of river values.
- Identify and decide upon those capacity-related actions ripe for decision.

Step 8. Determine the WSR corridor's user capacity

- Identify a measurable amount of use each analysis area can receive without crossing thresholds.
- Establish user capacities that reflect an appropriate quantity of use.
- Support user capacity decisions with information that meets NEPA and agency requirements.

Step 9. Establish a monitoring and adaptive management approach

- Monitoring of indicators is critical to help determine whether management actions are:

1. Implemented as designed.
2. Effective in preventing degradation and protecting and enhancing river values.
3. Based on valid assumptions about user behaviors, relationship of use to river values, and changes in social perception about crowding.

- New information may require a CRMP amendment or capacity adjustment.
- An adaptive management strategy can be a critical tool, which allows managers to use new information to shape future management approaches.
- The types of new information that may lead to a capacity adjustment include the following:

1. Results of monitoring.
2. Identification of more appropriate indicators and thresholds.
3. Clarification of the relationship between the level of use and condition of river values.
4. Changes in visitor use patterns that could affect river values.
5. Changes in original assumptions, such as management actions to be taken.
6. Identification of a new outstandingly remarkable value (ORV) or new information about an existing ORV.

Key Concepts

There are several key concepts incorporated in the ISWRCC framework for addressing user capacity in WSRs that warrant further description. Each of these key concepts is described in this section.

Desired conditions provide an important part of the foundation for addressing user capacities. Desired conditions are narrative statements that describe the quality, character, and conditions of river values and visitor experiences to be protected by the CRMP, while allowing for uses that are consistent with the Act. It is the responsibility and privilege of the managing agency (i.e., USFS or BLM for this project) to specify desired conditions for river values and visitor experiences.

Indicators are measurable proxies for desired river resource and visitor experience conditions that can be monitored to track changes in river values associated with recreation use. For example, the number of encounters with other groups per hour while hiking is an indicator related to the quality and character of visitors' experiences. Similarly, the aggregate areal extent of impact on campsites and recreation sites is an indicator related to the protection of natural resource conditions. Good indicators are those that can be easily and reliably measured, are related to and representative of desired conditions, and are responsive to visitor use management actions. For the purposes of managing use according to numeric user capacities, indicators must also be directly related to the amounts and types of recreation use.

Social indicators (e.g., hiking encounters, number of people at one time at boat ramps, etc.) tend to be directly related to changes in the types and amounts of recreation use and provide a reliable basis for managing recreation use according to numeric user capacities. In contrast, natural resource-related indicators generally do not have direct and reliably quantifiable relationships to recreation use

levels except in extreme low-use situations (e.g., trail-less/cross country zones, foot trails with fewer than 50 to 250 hikers *per year*). Nonetheless, resource-related indicators should be monitored, and adaptive resource management actions should be taken to protect ORVs from impacts. Improving the sustainability of recreation resources (e.g., side-hill alignment of trails and siting of campsites) and managing the characteristics of visitor use (e.g., to promote low-impact use behaviors and patterns, etc.) are the most effective methods for limiting or reducing impacts to natural resource-related indicators.

Thresholds are the minimally acceptable conditions of indicators to prevent degradation of river values. Thresholds should be precise, time-bounded, and outcomes of recreation use rather than types or amounts of recreation use themselves. Like thresholds, **triggers** are quantifiable conditions of indicators; they represent points at which adaptive management actions are needed to ensure the conditions of indicators do not cross thresholds. In other words, triggers are designed to support proactive visitor use management to protect river values from adverse impact, while allowing for recreation use that is consistent with the requirements of the Act.

Within the ISWRCC framework, **numeric user capacities** are estimated based on quantifiable relationships between the types and amounts of recreation use and the conditions of use-related indicators ("user capacity indicators"). The best available data are used to estimate the maximum amount of recreation use that can be accommodated without crossing thresholds for user capacity indicators. For example, trail counter data could be correlated with observations from encounter patrols to estimate the maximum number of people who can hike in a river corridor without crossing a threshold for the number of encounters hikers have with other groups per hour or day.

A systematic **monitoring** program provides the structure to measure indicators and assess their conditions in relation to triggers and thresholds on a recurring basis. Monitoring results provide the basis to determine if actions are needed to **adapt management** of recreation use to protect river values from adverse impacts.

Overall Approach

The framework and concepts described above were operationalized and applied to the specific context of Piru Creek WSR beginning with a series of online CRMP work sessions held with the USFS Interdisciplinary Team (IDT). As part of the series of work sessions, the IDT identified and summarized all types and locations of currently established recreational uses and discussed and documented that there were generally no reasonably foreseeable new types of recreational uses expected to occur in the future. Possible limiting factors for recreation use capacities were identified, as were the ORVs that may potentially be impacted by visitor use. Analysis areas were identified, and their desired conditions, WSR classifications, and ROS classes were discussed and documented.

User capacity methods were developed to estimate numeric user capacities for analysis areas within the river corridor. The methods specified the (1) analysis areas, (2) type(s) of use, (3) indicators directly related to types and amounts of use, (4) basis for specifying thresholds, and (5) mathematical or statistical methods and USFS management judgements used to estimate the numeric user capacities. The IDT conducted a series of conference calls to refine the user capacity approach for each analysis area before finalization. Triggers for the user capacity indicators and adaptive management strategies were identified based on a review of literature and other recent CRMPs and professional judgement. Triggers, thresholds, and adaptive management strategies were also identified for resource-related indicators. These indicators were included in the plan as an important part of long-term monitoring and adaptive management to protect and enhance river values.

Recreation Use and User Capacities

This section presents the methods and results to establish current recreation use conditions, user capacities, and management triggers and adaptive management strategies for Piru Creek WSR. It is organized into subsections that contain detailed information about:

- Analysis areas and their river classifications, ROS classes, and desired conditions
- Recreation use setting, including access, facilities, activities, and seasons
- River values potentially affected by recreation use
- Methods and results to estimate current recreation use and numeric user capacities
- Indicators, triggers, thresholds, and adaptive management strategies for resource and experiential indicators.

Analysis areas

Three analysis areas were identified by the IDT for Piru Creek WSR as depicted in Figure 2. These analysis areas were identified based on river classification, ROS class, types and amounts of recreation use, and geography. Each analysis area is described below.

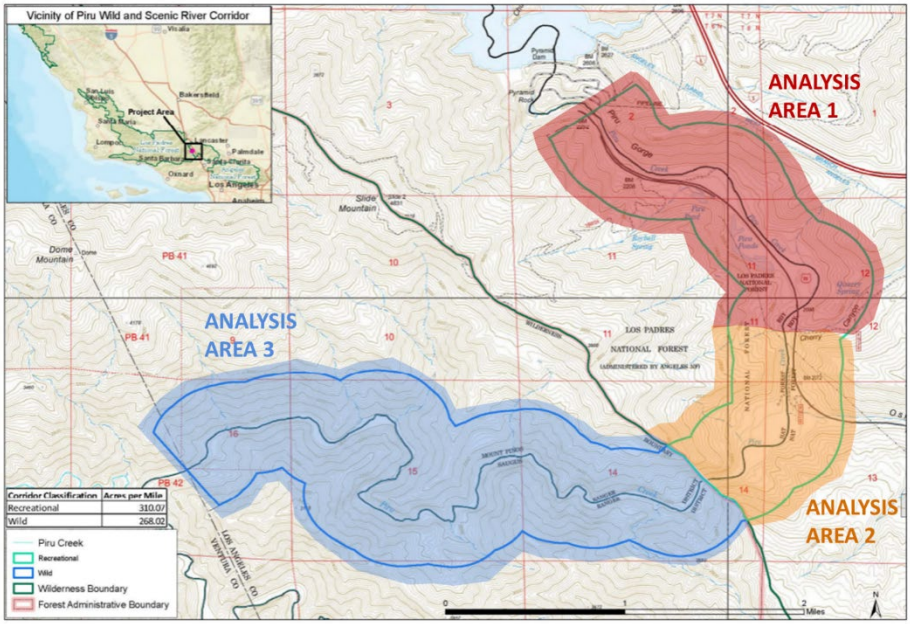

Figure 2: Piru Creek Analysis Areas

Analysis Area 1

Analysis Area 1 is upstream of the Frenchman's Flat Day Use Area. It includes the Piru Creek WSR corridor from where it begins 0.5 miles downstream of Pyramid Dam to the Old Highway 99 bridge crossing just north of Cherry Canyon. Piru Creek is designated recreational in this analysis area and lies entirely on land managed by the Angeles National Forest in a semi-private, non-motorized ROS zone. Desired conditions for Analysis Area 1 are as follows.

In the recreational segment above Frenchman's Flat, visitors experience a natural and unspoiled river system, with enough separation between groups that they can enjoy quiet and the freedom to swim, bicycle, or hike at their own pace. The water is clear and refreshing, supporting a variety of aquatic species. A small system of dispersed sites and natural surface trails provide visitors the ability to access the river without causing trampling impacts that degrade water quality.

Analysis Area 2

Analysis Area 2 contains the Frenchman's Flat Day Use Area. It includes the Piru Creek WSR corridor from the Old Highway 99 bridge crossing just north of Cherry Canyon downstream to the Sespe Wilderness boundary. Piru Creek WSR is designated recreational in this analysis area and lies entirely on land managed by the Angeles National Forest in a roaded natural ROS zone. Desired conditions for Analysis Area 2 are as follows.

At Frenchman's Flat, visitors can socialize in a natural environment. The healthy and vibrant river system provides respite from hot summer days. Visitors can travel on a small number of natural surface trails to access the river; these trails and the dispersed sites where visitors situate themselves along the river are sustainably designed to prevent the spread of trampling impacts that degrade water quality.

Analysis Area 3

Analysis Area 3 is downstream of the Frenchman's Flat Day Use Area. It includes the Piru Creek WSR corridor from the Sespe Wilderness boundary downstream to the boundary between Los Angeles County and Ventura County. Piru Creek is designated wild in this analysis area and is located on land managed by the Los Padres National Forest in a primitive ROS zone. Desired conditions for Analysis Area 3 are as follows.

The wild segment is located within Congressionally designated Wilderness, where visitors' expectations and management emphasis are on opportunities for solitude and challenge. In the wild segment, there is little or no sign of human use. The area is free of any formal or informal trails and of significant ground disturbance from dispersed day use or camping sites. The few visitors who explore this segment of the river corridor experience a sense of remoteness and a sense of escape from the routine of everyday life. The bends and turns of the river, together with very low levels of visitor use in this area make encounters with other visitors rare. Travel in this trail-less segment of the river corridor is challenging, providing visitors with a sense of adventure and accomplishment.

Table 1 summarizes the WSR classification and ROS class for each of the three analysis areas for Piru Creek WSR.

Table 1. WSR Classification and ROS class, by analysis area

Analysis Area	River Classification	ROS Class
Analysis Area 1	Recreational	Semi-primitive, non-motorized
Analysis Area 2	Recreational	Roaded natural
Analysis Area 3	Wild	Primitive

Recreation use setting

Recreational use in Piru Creek WSR occurs year-round, however, with the exception of whitewater boating use, the peak season of use occurs from April through October and tends to be lower in the colder winter months (Table 2). Analysis Area 1 and Analysis Area 2 experience moderate to high use during peak season weekends and holidays, and moderate to low use otherwise. Recreational

use is very low year-round in Analysis Area 3, and what use there is in the area occurs only during the warmer months of the year.

Primary access for recreation use in Piru Creek WSR is via Old Highway 99, with parking at Frenchman's Flat and overflow parking on the shoulders of Old Highway 99 during peak periods. There is a gate on Old Highway 99 at the north end of the parking area at Frenchman's Flat. Beyond the gate at Frenchman's Flat, Old Highway 99 serves as a non-motorized, paved trail for non-vehicular access into and through Analysis Area 1. There is a network of informal trails and at-large day use recreation sites in Analysis Area 1 and Analysis Area 2 that was created by visitors to gain access to the river. Recreation use and river access in Analysis Area 3 is almost entirely via trail-less bushwhacking, with very little evidence of visitor-created informal trails or recreation sites.

The primary day use recreation activities in Analysis Area 1 and Analysis Area 2 are swimming and water play, fishing, birding, and dispersed picnicking. Swimming and water play are particularly concentrated downstream of what is commonly known as the "waterfall" to the narrows (including under the bridge) at the USGS gauging station north of Frenchman's Flat in Analysis Area 1. Some whitewater boating upstream of Frenchman's Flat also occurs, although access is constrained due to Forest Service motor vehicle use regulations. Walking and bicycling on the non-motorized trail are also popular day use activities in Analysis Area 1. Camping is discouraged but not prohibited in Analysis Area 1 and Analysis Area 2. No evidence of camping was observed in Analysis Area 1 during an onsite assessment conducted as part of this project, and only a single overnight campsite was discovered in Analysis Area 2.

Analysis Area 3 offers opportunities for hiking, backpacking/canyoneering, fishing, hunting, and dispersed camping in a remote, trail-less, and rugged Wilderness landscape The combination of easy access from Frenchman's Flat, some predictability of flows from FERC license conditions, as well as class IV rapids, also provide some whitewater boating opportunities in this analysis area. There have typically only been a few days a year when enough precipitation occurs to enable high enough releases from the dam to accommodate boaters. From 2007 to 2024, boating opportunities were inconsistent, with some years offering up to 55 boating days and other years none (American Whitewater, 2025). Even in those instances boaters reported needing to portage some sections. Upcoming revisions to the State Water Project FERC license conditions for flow release are expected to provide recreational users greater predictability of suitable flows.

Table 2 summarizes the primary means of access, types, peak season(s), and amounts of recreation use for each of the three analysis areas for Piru Creek WSR. Table 3 lists the current types of recreation facilities located in each of the three analysis areas for Piru Creek WSR.

Table 2. Piru Creek WSR recreation use access, types, peak season(s), and amounts, by analysis area.

Analysis Area	Primary access for recreation use	Types of use	Peak season(s) of use	Amount of use
Analysis Area 1	▪ Vehicle access via Old Highway 99 ▪ Parking at Frenchman's Flat ▪ Overflow parking on Old Highway 99 during peak periods	▪ Non-motorized trail use – walking and bicycling ▪ Swimming/water play ▪ Fishing ▪ Birding ▪ Dispersed picnicking	▪ April through October	▪ High use during peak season weekends and holidays; moderate to low use otherwise.
Analysis Area 2	▪ Vehicle access via Old Highway 99 ▪ Parking at Frenchman's Flat ▪ Overflow parking on Old Highway 99 during peak periods	▪ Swimming/water play ▪ Fishing ▪ Birding ▪ Dispersed picnicking ▪ Dispersed camping	▪ April through October	▪ High use during peak season weekends and holidays; moderate to low use otherwise.
Analysis Area 3	▪ Vehicle access via Old Highway 99 ▪ Parking at Frenchman's Flat ▪ Overflow parking on Old Highway 99 during peak periods	▪ Cross-country (trail-less) hiking and backpacking ▪ Whitewater boating (limited/seasonal) ▪ Fishing ▪ Hunting	▪ Not applicable	▪ Very low use, year-round; most use is during warmer months

Table 3. Piru Creek WSR recreation facilities, by analysis area.

Analysis Area	Recreation facilities
Analysis Area 1	▪ Non-motorized trail (Old Highway 99) ▪ Visitor-created dispersed day use recreation sites ▪ Visitor-created dispersed informal trails
Analysis Area 2	▪ Low development trailhead ▪ Parking lot (60 striped spaces) ▪ Trash dumpsters ▪ Picnic area (4 picnic tables) ▪ Restrooms (2 vault toilets) ▪ Non-motorized trail (Old Highway 99) ▪ Visitor-created dispersed campsites ▪ Visitor-created dispersed day use recreation sites. ▪ Visitor-created dispersed informal trails
Analysis Area 3	▪ Visitor-created dispersed campsites ▪ Visitor-created dispersed informal trails

Future recreation use

There are no new types of recreational use that are expected to be introduced in the Piru Creek WSR corridor in the foreseeable future. Existing types of recreation use in the corridor are likely to

increase in the future as the population of the surrounding area grows and as water-dependent recreation activities continue to be important to the public. Future recreation use will likely continue to be concentrated on weekends and holidays during the months of April through October and in the Recreational Segment of the river corridor. Recreation use is not expected to increase in the future in the Wild Segment of the river corridor due to the limited and challenging access there.

River Values Potentially Affected by Visitor Use

The core river values for which Piru Creek WSR was added to the National Wild and Scenic Rivers System include free flow and water quality. Piru Creek WSR also possesses ORVs for geology, wildlife, and fisheries in all three analysis areas and for scenery and recreation in Analysis Area 3. In this section, we identify and discuss the effects or potential effects of recreation use on these river values in the Piru Creek WSR corridor. The effects of recreation use considered in this assessment are not only with respect to the amounts of recreation use, but also other characteristics of use (e.g., visitor behavior, dispersed versus concentrated use, etc.). The assessments of the effects of recreation use on river values in this section are general in nature, and relationships between recreation use and impacts are better understood for some river values than others. Where there are available data and/or reliable anecdotal observations, known impacts of current recreation use are presented. This section also reports potential impacts for relationships between recreation use and river values that have not been studied, and for impacts that could occur if recreation use, or facilities were to increase in the future.

Free flow and water quality are potentially affected by recreation use in Analysis Area 1 and Analysis Area 2 in several ways. Sediment loading caused by runoff from the bare ground of visitor-created informal trails and at-large day use and camping sites can degrade free flow and water quality. Crowding could exacerbate this issue by causing visitors to pioneer new informal trails and at-large recreation sites to disperse further away from others. This would increase the extent of bare ground and sediment loading in the area and degrade water quality and free flow. As part of this project, the contract team conducted an onsite assessment of the number and spatial extent of visitor-created informal trails and at-large day use and camping sites in each of the three analysis areas of Piru Creek WSR (see “Appendix A — Recreation Site Assessment Methods” for a detailed description of methods and results). Results of this assessment are summarized in the following paragraphs.

Main visitor-created informal trails paralleling the river were identified and followed to document where they became discontinuous and then ended. The percentage of Analysis Area 1 with a main visitor-created informal trail was 15.6% for Analysis Area 1, 100% for Analysis Area 2, and 31.3% for Analysis Area 3.

Thirty-two visitor-created informal side-trails were also located and assessed, including 10 in Analysis Area 1, 21 in Analysis Area 2, and 1 in Analysis Area 3. Most of the visitor-created informal side-trails in Analysis Area 1 and Analysis Area 2 lead from a main visitor-created informal trail or from Old Highway 99 to day use recreation sites on the river. Most of these have “unsustainable” fall-line alignments (aligned with the direction of water flowing downhill). Many of the visitor-created informal side-trails that access the river from Old Highway 99 traverse steep slopes and are badly eroded.

Nineteen visitor-created day use recreation and campsites were found and assessed, including three overnight campsites (1 in Analysis Area 2 and 2 in Analysis Area 3) and 16 visitor-created day use sites (6 in Analysis Area 1 and 10 in Analysis Area 2). Professional judgement was applied to determine the “predominant” use of the visitor-created recreation sites. All 16 day use sites were judged to have been created and used predominantly by day use visitors. All are located on the Piru Creek WSR shoreline and the predominant recreation activities are water related (e.g., swimming,

relaxing next to the creek, fishing). Three recreation sites appeared to have been created and used predominantly by overnight campers, one in Analysis Area 2 and two in Analysis Area 3.

The formal picnic sites in Analysis Area 2 are located away from Piru Creek with no notable resource concerns. The access trail from picnic site 3 to the roadside vault toilet is heavily used and eroded, though runoff is filtered before reaching Piru Creek. Similarly, the three overnight campsites are quite limited in number and have typical and likely acceptable resource conditions. The visitor-created day use sites are of concern because many are heavily used, and each has a boundary along the Piru Creek water's edge. Related, some of the visitor-created informal side-trails that traverse steep slopes drain directly to visitor-created day use recreation sites on Piru Creek shorelines.

Free flow and water quality may also be affected by improper disposal of human waste and trash, and visitor-created rock dams. Similarly, some wildlife species may be affected by improper trash disposal. The onsite assessment conducted as part of this project included an inventory of improperly disposed trash and human waste and of visitor-created rock dams. Trash was rare in Analysis Area 1 and more common in Analysis Area 2, primarily away from the developed area and trash receptacles. In Analysis Area 3 there were only two campsites, the most remote site had the most trash of any site observed, and the other had no litter. Only five instances of improperly disposed human waste were found across all three analysis areas. This level of improperly disposed human waste is low, likely due to the presence of toilets and the periodic removal of waste from flooding events. Only one instance of a visitor-created rock dam was found, across a tributary to Piru Creek just downstream from the main vault toilet in Analysis Area 2.

Geology is unlikely to be affected by the amount of recreation use in any of the three analysis areas in Piru Creek WSR corridor due to resistance and resilience of the geological features in this area. That said, two instances of graffiti were found on rock and cliff faces during the onsite assessment. These impacts are attributable to depreciative behavior that is best managed with education and potentially law enforcement, not with numeric user capacities.

The fishery in Analysis Area 1 and Analysis Area 3 is unlikely to be affected by recreation use due to low fishing use levels year-round. It may be affected by concentrated recreation use in Analysis Area 2, including angling, during the peak season. Scenery and recreation are outstandingly remarkable values in Analysis Area 3, and both are unlikely to be affected by recreation use due to very low use levels year-round in that area. That said, USFS will increase coordination with rescue service providers to track trends in search and rescue incidents that could be associated with future increases in whitewater boating in the Wild Segment.

Current Recreation Use

This section reports the methods and results of data collection and analysis conducted to quantify current recreation use in the Piru Creek WSR and to help inform user capacity analyses for the river corridor. Traffic, parking, and visitor use count data were collected at Piru Creek WSR on samples of days and hours between mid-May through mid-July 2024. The following sections summarize the data collection methods and results, by data type.

Vehicle traffic volumes

A pneumatic tube traffic counter was deployed on Old Highway 99 to record counts of vehicles traveling to (northbound) and from (southbound) Piru Creek WSR (Figure 3). The location of the traffic counter was selected such that virtually all vehicles passing the counter can be assumed to be destined for Piru Creek WSR. The only exceptions are USFS administrative vehicles, vehicles

traveling past the counter to service Pyramid Dam, and those traveling to and from one private residence located north of the counter location.

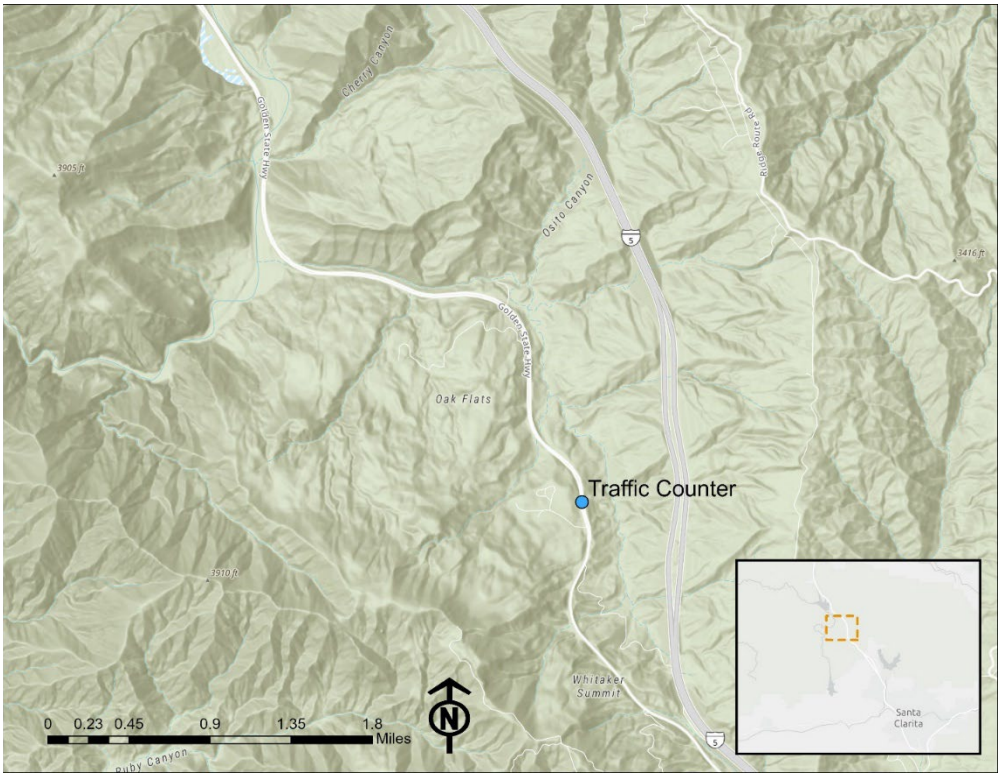

Figure 3. Piru Creek WSR traffic counting location

The automated traffic counter recorded 24-hour vehicle traffic counts in hourly bins for a total of 61 days between May 10 and July 10, 2024. A subset of these data from Memorial Day Weekend through July 4th Weekend were analyzed for this project to represent the peak recreation use period in Piru Creek WSR. Figure 4 presents the daily number of vehicles counted during the Memorial Day Weekend through July 4th Weekend period traveling northbound on Old Highway 99 (i.e., inbound to Piru Creek WSR).

We used an outlier analysis to determine that the inordinately high traffic counts highlighted in a dark color in Figure 4 and recorded during Memorial Day Weekend are extreme outliers. Consequently, while we have included them in Figure 4 for presentation purposes, we excluded Memorial Day Weekend data from subsequent analysis and summaries to avoid overstating recreation use conditions that are "typical" of the peak season. During the counting period[1], daily northbound (i.e., inbound to Piru Creek WSR) vehicle counts from 6:00 a.m. through 6:59 p.m. (hereafter we refer to these hours of the day as the "visitor use day") ranged from around 100 to 250 vehicles per day on weekend days and holidays, and from around 50 to 150 vehicles per day on weekdays. The maximum daily northbound vehicle traffic volume recorded during the counting period was approximately 325 vehicles on Sunday, June 2.

[1] Due to the outlier counts recording on Memorial Day Weekend, we refer to the period from Tuesday, May 28 through Sunday, July 7, 2024, as the "counting period" for this project.

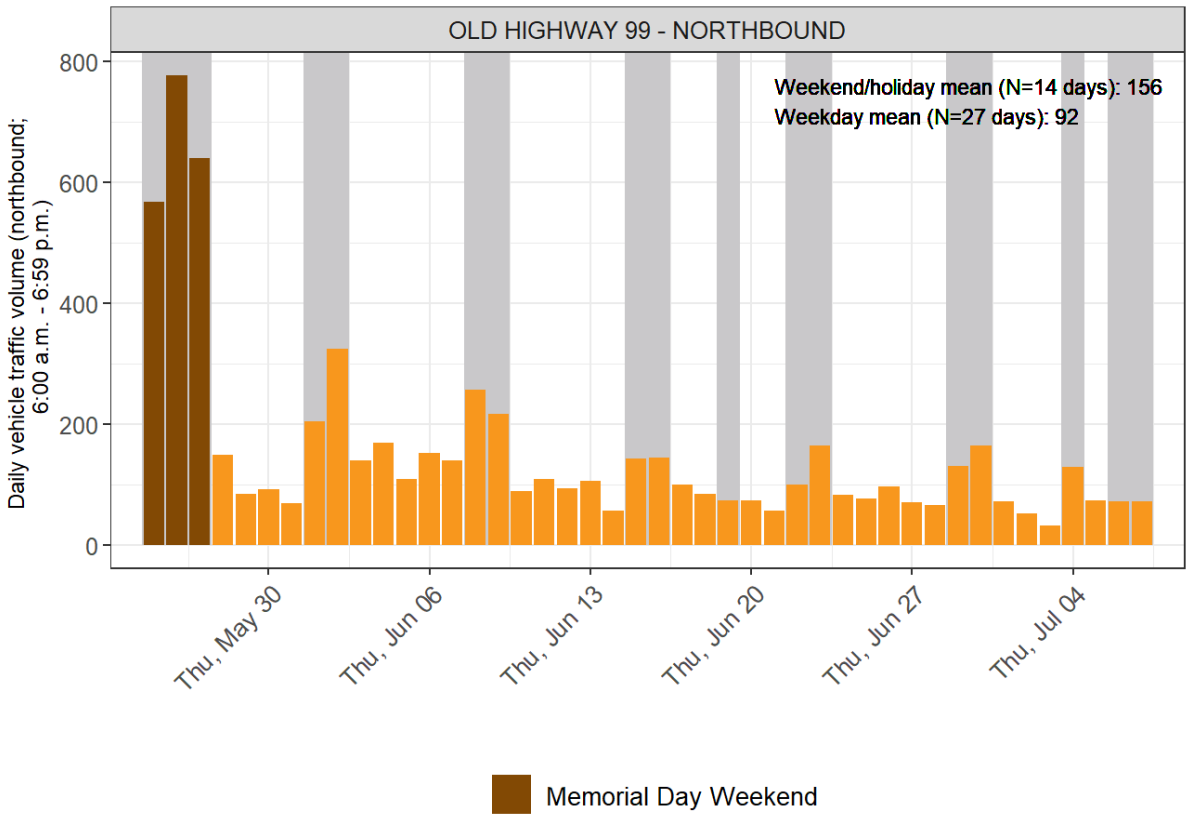

Figure 4. Daily vehicle traffic volumes (northbound) - Old Highway 99

Figure 5 presents mean hourly traffic volumes, by direction of travel and day of week type (weekend days/holidays or weekdays) for the counting period and visitor use day. Mean hourly northbound and southbound traffic volumes were consistently higher on weekend days/holidays compared to weekdays. The peak mean hourly northbound traffic volume was approximately 18 vehicles, which occurred at 8:00 a.m. on weekend days/holidays. The peak mean hourly southbound traffic volume was also approximately 18 vehicles, which occurred at 4:00 p.m. on weekend days/holidays.

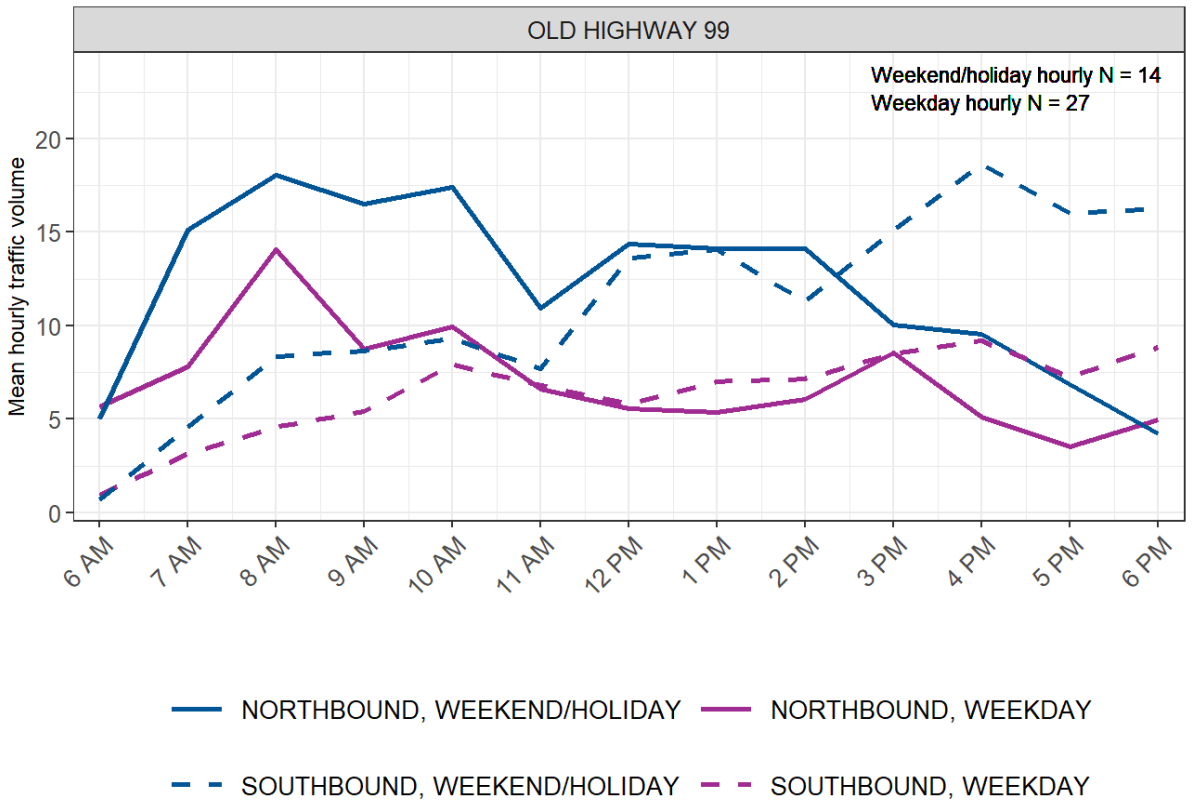

Figure 5. Mean hourly vehicle traffic volumes, by direction and day of week type - Old Highway 99

Parking accumulation at Frenchman's Flat

The vehicle traffic counter data were used to estimate the hourly number of vehicles parked at Frenchman's Flat and on the roadside of Old Highway 99 (referred to hereafter as vehicles-at-one-time or VAOT) each day of the counting period. For each date of the counting period, hourly VAOT was estimated using the following formula which calculates the cumulative sum of hourly net inbound vehicles and assumes no vehicles are parked at Frenchman's Flat at the start of each day.

$$VAOT_{hour\ x} = VAOT_{hour\ x-1} + (\text{Northbound Vehicle Count}_{hour\ x} - \text{Southbound Vehicle Count}_{hour\ x})$$

Figure 6 plots the hourly VAOT estimates for each weekday during the counting period and Figure 7 plots the same for weekend days and holidays during the counting period. These results suggest parking on weekdays during the peak season generally does not exceed the designated parking capacity at Frenchman's Flat of 60 striped spaces, but that it is exceeded on some of the busier weekend days and holidays during peak season and may reach maximums of 100 or more VAOT. Onsite observations suggest that there are more than ample shoulders on Old Highway 99 adjacent to Frenchman's Flat to safely accommodate substantial roadside parking there.

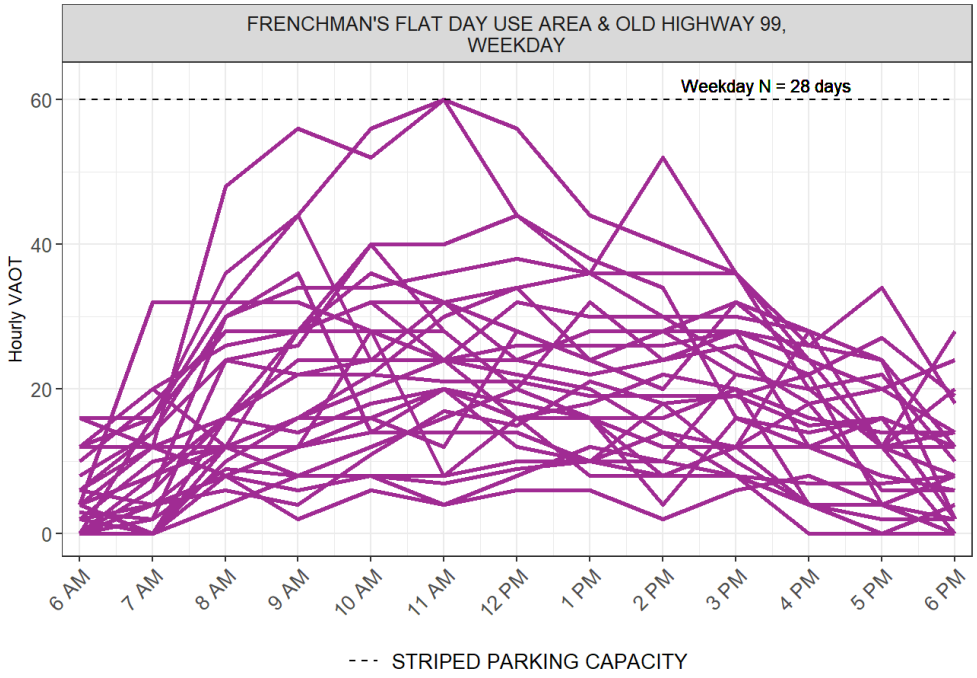

Figure 6. Hourly parking accumulation, by date (weekdays) - Frenchman's Flat & Old Highway 99 Roadside

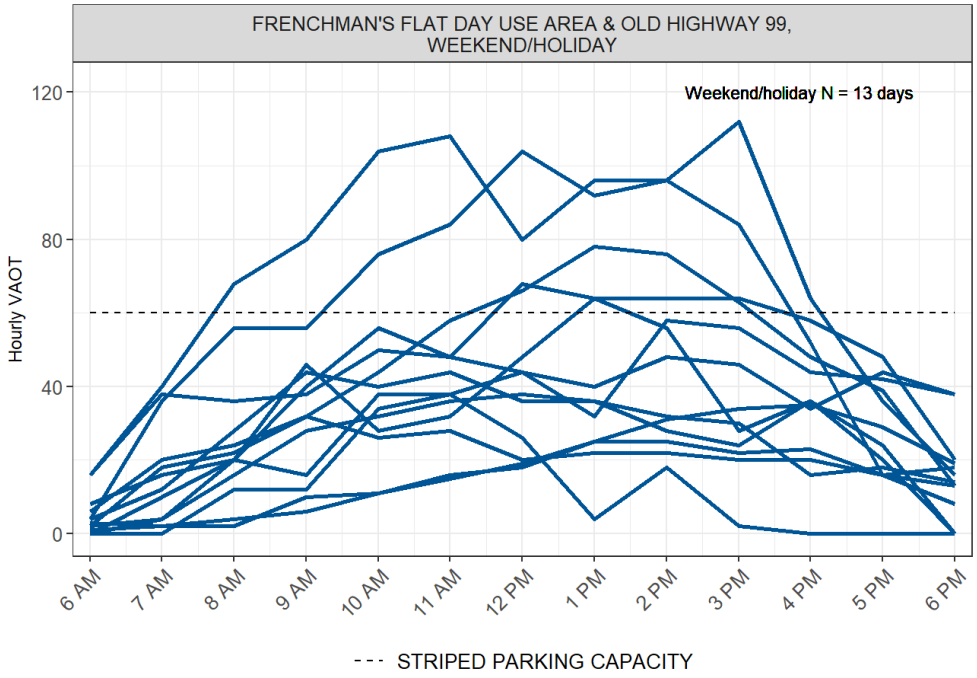

Figure 7. Hourly parking accumulation, by date (weekend days and holidays) - Frenchman's Flat & Old Highway 99 Roadside

Estimates of mean hourly VAOT, by day of week type (weekend days/holidays or weekdays) are presented in Figure 8. Mean hourly VAOT was higher on weekend days/holidays compared to weekdays for all hours of the visitor use day. Peak weekend day/holiday mean hourly VAOT was approximately 50 vehicles, which occurred at 2:00 p.m., whereas peak weekday mean hourly VAOT was approximately half that (25 vehicles) and occurred at 10:00 a.m.

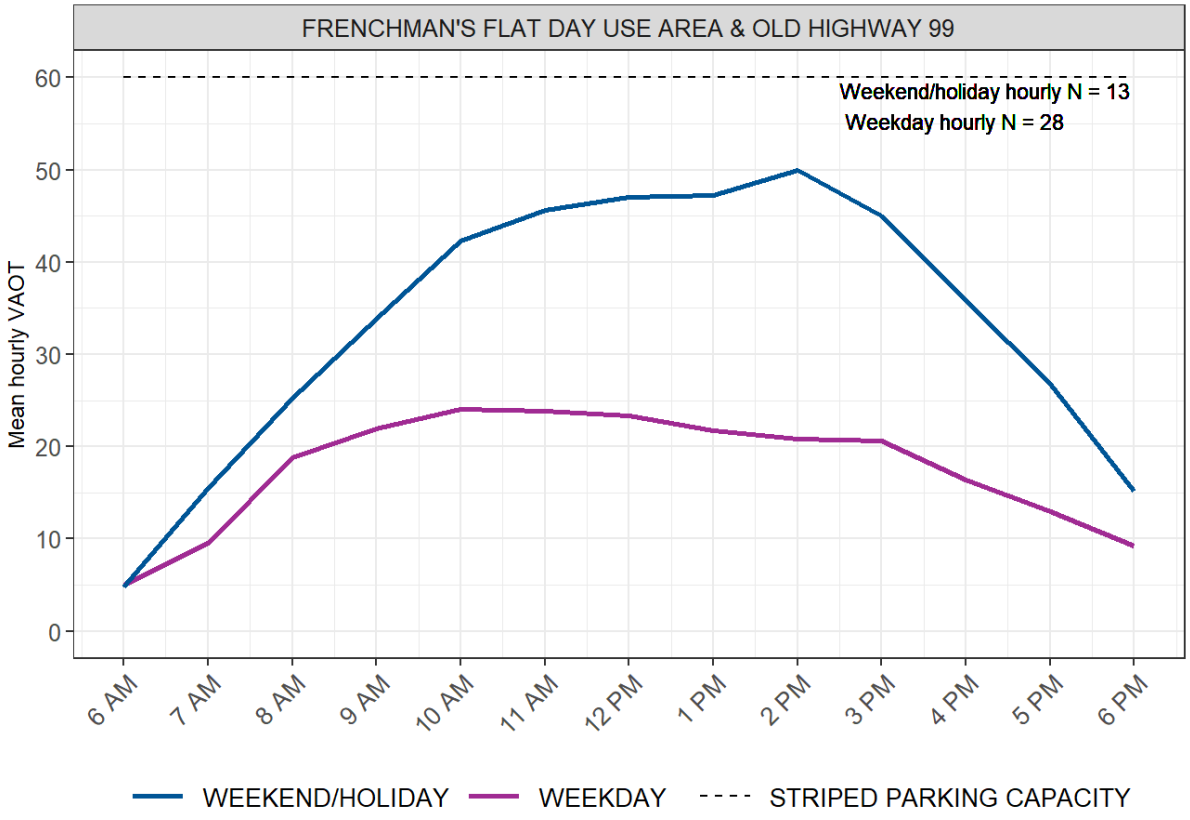

Figure 8. Mean hourly parking accumulation, by day of week type - Frenchman's Flat & Old Highway 99

Visitor use counts

An infrared trail counter was deployed in each of Analysis Area 1 and Analysis Area 3 to record 24-hour counts of visitor use in hourly bins May 11 and July 10, 2024 (Figure 9). Both analysis areas appeared to have a good pinch point, based on virtual site scoping using Google Earth and discussions with USFS, where counting recreation use with an infrared trail counter would work well. However, it was determined during the onsite assessment that the area selected as a pinch point for Analysis Area 1 (the bridge on Old Highway 99 just north of Cherry Canyon) was in fact too wide to record counts reliably with an infrared trail counter and there were no other good substitute spots. Consequently, counts recorded for a small sample of hours using direct observations were used as the basis for analysis of visitor use in Analysis Area 1. The trail counter location selected based on virtual site scoping for Analysis Area 3 was verified during the onsite assessment and the trail counter data recorded there were used as a reliable basis for estimating visitor use in Analysis Area 3.

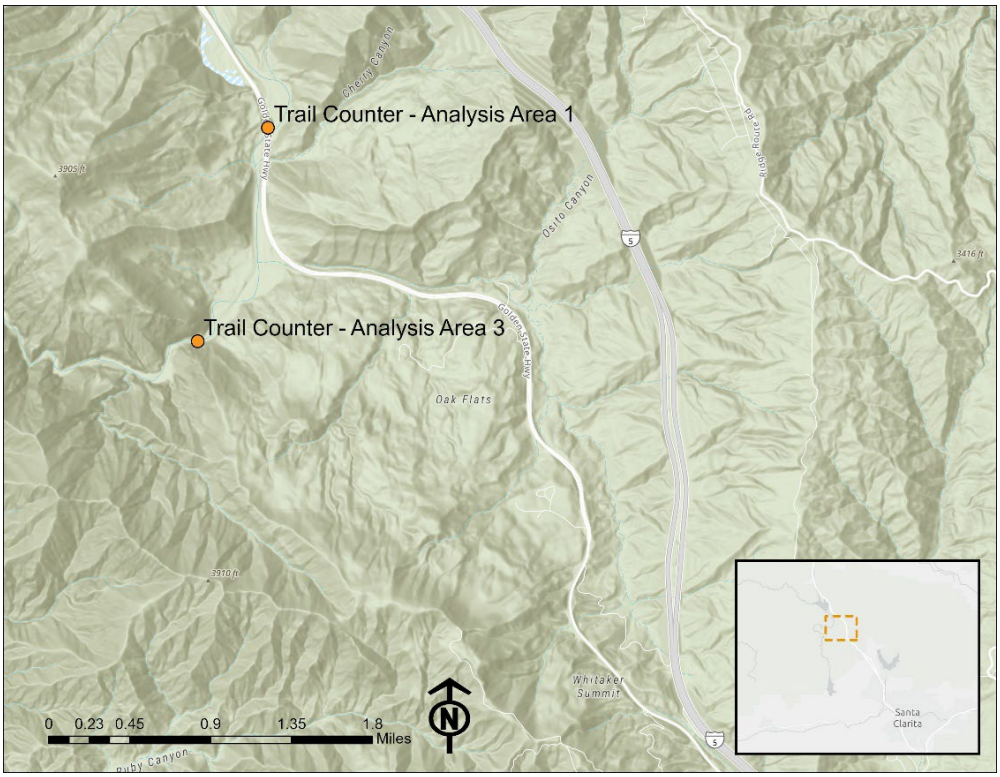

Figure 9. Piru Creek WSR trail counting locations

Recreation use in Analysis Area 2 is dispersed and does not have a pinch point through which visitors to the analysis area must generally pass. Consequently, it was not technically feasible to systematically and reliably count visitor use in Analysis Area 2 with an infrared trail counter or via-direct observation. Instead, visitor use in Analysis Area 2 was estimated based on differences between total visitor use in Piru Creek WSR accounted for by the traffic counter on Old Highway 99[2] and the sum of the counts in Analysis Area 1 and Analysis Area 3. The results of these calculations suggests that the share of total visitor use in Piru Creek WSR that occurs in each analysis area is as reported in Table 4. We consider our corresponding estimates of daily visitor use in Analysis Area 2 to be imprecise and do not report them in this section.

Table 4. Estimated share of total visitor use in Piru Creek WSR, by analysis area

Analysis Area 1	Analysis Area 2	Analysis Area 3
19%	78%	3%

Figure 10 plots estimates of the daily number of visitors passing the trail counter in Analysis Area 1 in the northbound direction (i.e., inbound into Analysis Area 1) during the hours of the visitor use day. These estimates were calculated by scaling the small sample of hours on each of the seven visitor use counting days by a factor derived from the hourly proportion of daily traffic recorded on Old Highway 99. Consequently, these estimates should be considered to have relatively low precision but reflect a reasonable order of magnitude. These estimates range from around five to 70 people per day.

[2] We converted traffic count data from counts of vehicles to estimates of people using a people-per-vehicle multiplier of 2.5 people.

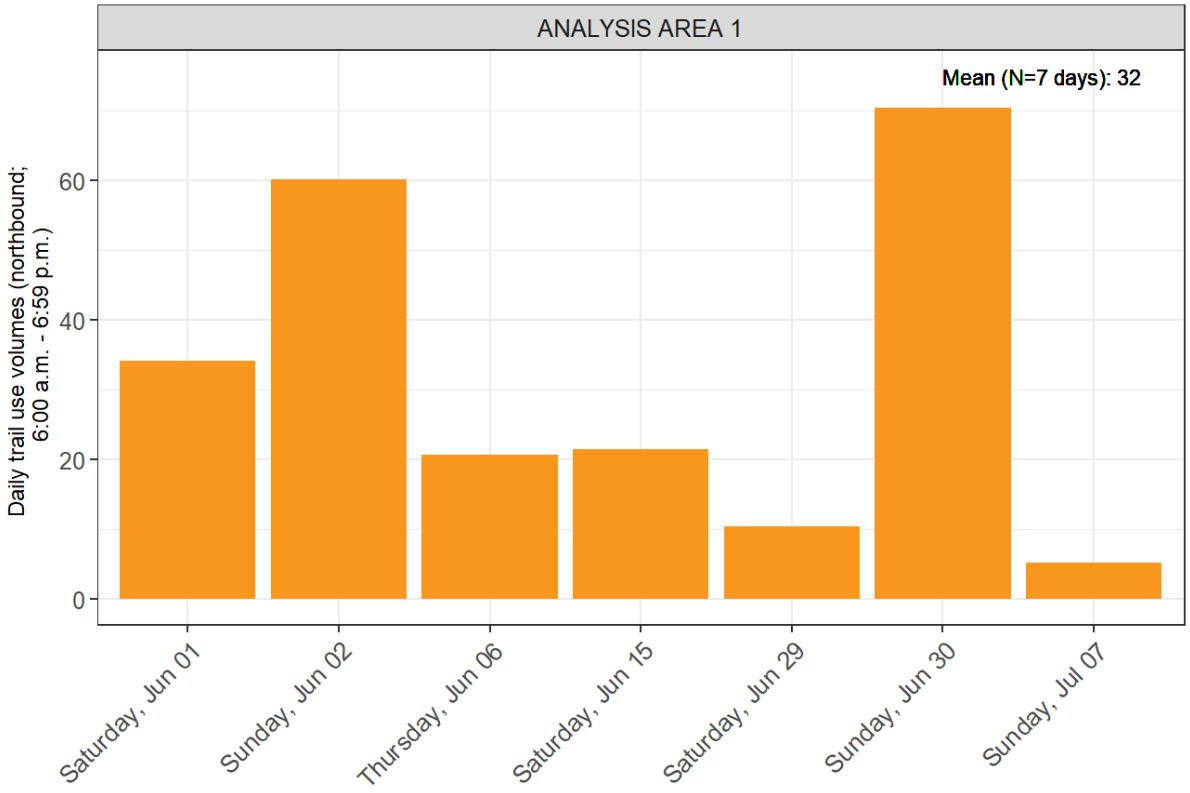

Figure 10. Daily trail use volumes (northbound) - Analysis Area 1

Figure 11 plots estimates of the daily number of visitors passing the trail counter in Analysis Area 3 in the westbound direction (i.e., inbound into Analysis Area 3) during the hours of the visitor use day. These estimates were calculated by dividing the raw (i.e., uncalibrated, non-directional) total daily counts registered on the counter by two based on the assumption that use in Analysis Area 3 is primarily out-and-back day use. Dates with an asterisk indicate dates with a daily trail use volume of zero. Dates with no bar and with no asterisk indicate dates where there were missing or outlier counts and for which a valid estimate of daily use could not be calculated. Daily westbound trail use volumes ranged from approximately one to 17 people per day on weekend days and holidays, and from zero to approximately 10 people per day on weekdays. The maximum daily westbound trail use volume observed during the counting period was approximately 18 people and occurred on Sunday, June 2.

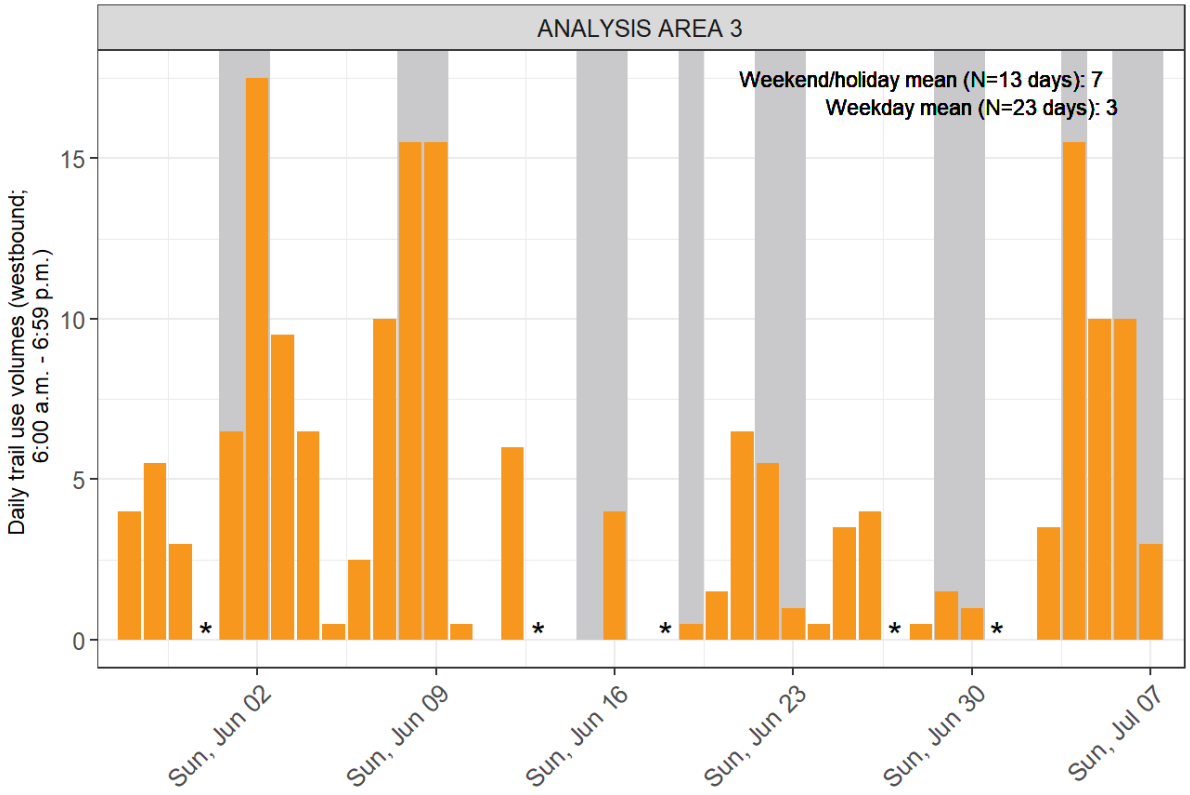

Figure 11. Daily trail use volumes (westbound) - Analysis Area 3

People-at-one-time (PAOT)

Mean hourly people-at-one-time (PAOT) in Piru Creek WSR was estimated by multiplying mean hourly VAOT estimates for Frenchman's Flat by a people-per-vehicle multiplier of 2.5 people. These estimates of "whole area PAOT" as we refer to them in this section were partitioned into estimates of PAOT in each analysis area using the estimated visitor use shares in Table 4. We believe the estimates of whole area PAOT are reliable but consider the analysis area-specific estimates to be less precise.

Figure 12 through Figure 15 present our estimates of mean hourly PAOT, by area (i.e., whole area and each analysis area) and day of week type (weekend days/holidays or weekdays) for the counting period and for the hours of the visitor use day. Mean hourly PAOT in Piru Creek WSR overall (i.e., "whole area PAOT") and in each analysis area was higher on weekend days/holidays compared to weekdays for all hours of the visitor use day. On weekend days and holidays, our estimates of mean whole area PAOT peak at approximately 125 people. In Analysis Area 1 they peak at just over 20 people, in Analysis Area 2 they peak at just under 100 people, and in Analysis Area 3 they peak at about five people.

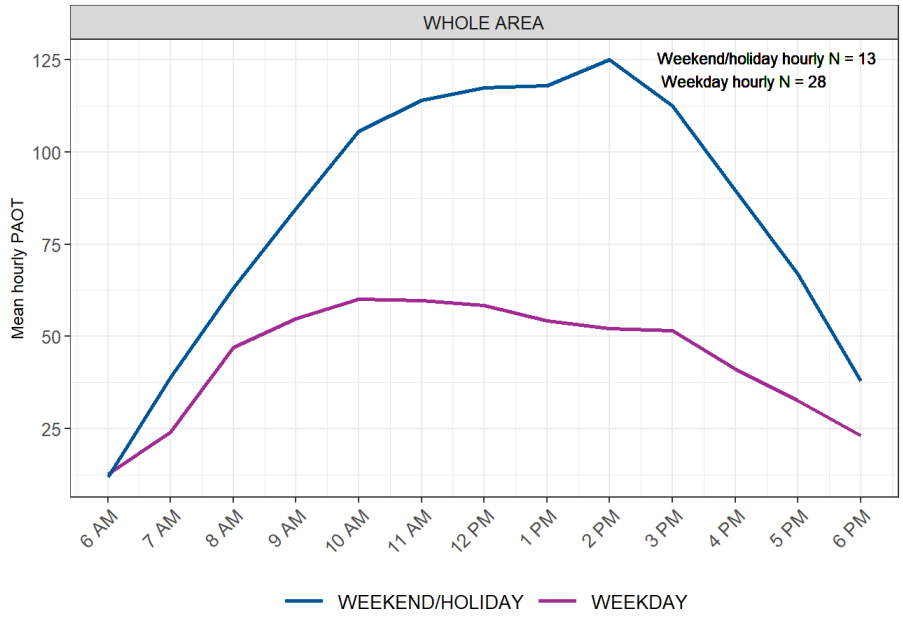

Figure 12. Mean hourly people-at-one-time (PAOT), by day of week type - Whole Area

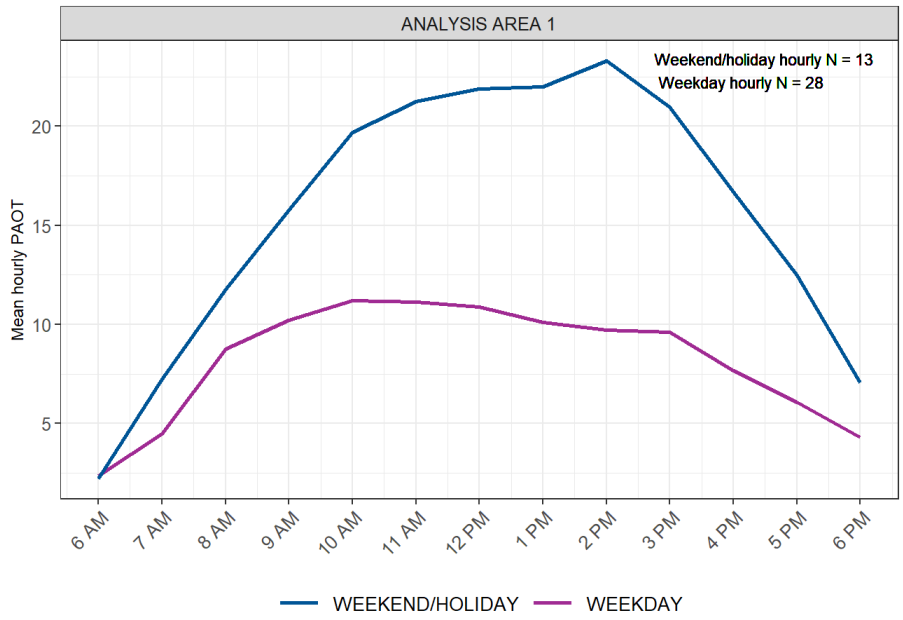

Figure 13. Mean hourly people-at-one-time (PAOT), by day of week type - Analysis Area 1

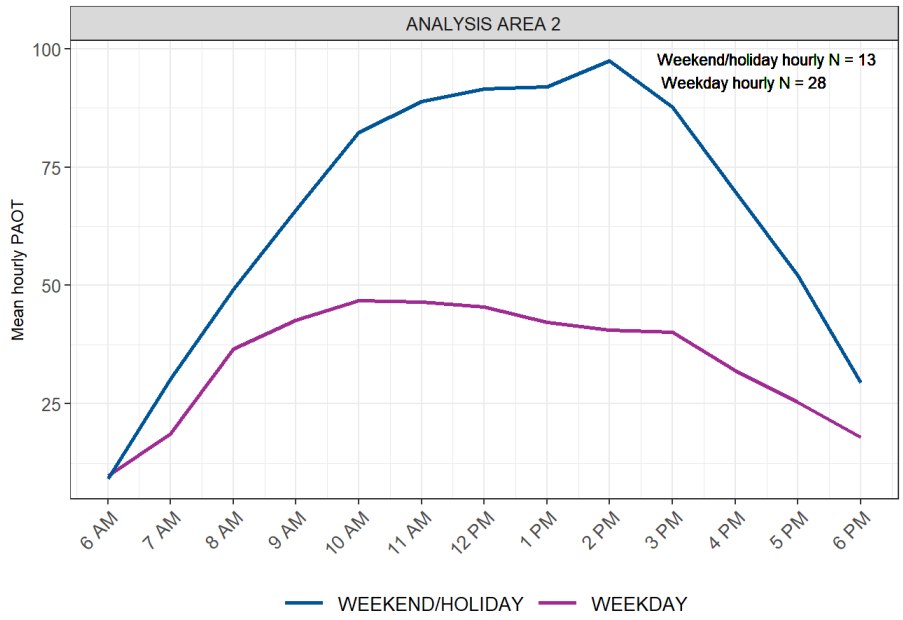

Figure 14. Mean hourly people-at-one-time (PAOT), by day of week type - Analysis Area 2

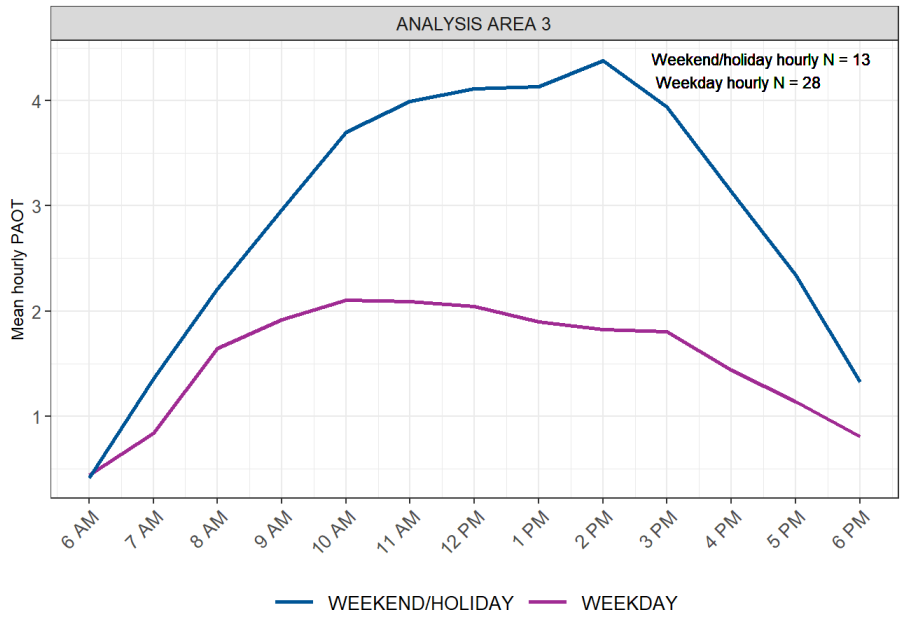

Figure 15. Mean hourly people-at-one-time (PAOT), by day of week type - Analysis Area 3

Capacity approach

Analysis Area 1 and Analysis Area 2

As noted, sediment loading caused by runoff from the bare ground of visitor-created informal trails and at-large recreation sites is the primary recreation-related risk factor for degradation of river values (specifically free flow and water quality) in Piru Creek WSR. Several poorly aligned informal trails and at-large recreation sites were observed in Analysis Area 1 and Analysis Area 2 as part of the onsite assessment completed for this project. These visitor-created informal trails and at-large recreation sites may be causing avoidable levels of sediment loading that degrade free flow and water quality. Where possible, the careful selection and closure/replacement of these informal trails and at-large recreation sites with sustainable, formal trails and dispersed recreation sites would mitigate sediment loading and better accommodate recreation use.

However, site management alone may not be enough to protect free flow and water quality if crowding occurs. If visitors feel crowded, they may disperse beyond formal trails and recreation sites to create their own personal space. This could cause visitors to pioneer new informal trails and at-large recreation sites, which would in turn increase the extent of bare ground and sediment loading in the area and potentially degrade water quality and free flow. With recreation use of Piru Creek WSR likely to increase in the future, the risk of current or future crowding impacts is real. As such, the limiting factor for recreational use in Analysis Area 1 and Analysis Area 2 of Piru Creek WSR is the number of people at one time (PAOT) that can be accommodated without visitors feeling crowded. This assumes that most visitors prefer to have some personal space while they are recreating in or along the river and will disperse beyond formal trails and recreation sites if they are crowded.

Given this, we considered several factors to estimate numeric user capacities for day use in Analysis Area 1 and Analysis Area 2. Based on the onsite assessment conducted as part of this project, we estimate that the existing, poorly aligned visitor-created at-large day use sites in Analysis Area 1 and Analysis Area 2 can be replaced with the following number and average size of sustainably designed day use recreation sites:

Analysis Area 1: 8 dispersed day use recreation sites, averaging approximately 700 square feet per site

Analysis Area 2: 12 dispersed day use recreation sites, averaging approximately 800 square feet per site

We also conclude from our onsite assessment that the 2 overnight camping sites in Analysis Area 2 have acceptable resource conditions, but that expansion of these or pioneering of new campsites could degrade river values.

Results of the USFS 2016 National Visitor Use Monitoring (NVUM) for the Angeles National Forest suggest the year-round average group size for recreation users Forest-wide is 3 people and median duration of stay in undeveloped recreation areas on the Forest is 2.5 hours. Correspondingly, we assume an average group size of 3 people and an average duration of stay of 2.5 hours in Analysis Area 1. In the more developed Analysis Area 2, we would expect group sizes to tend to be somewhat larger than in undeveloped recreation areas, and we observed day use recreation groups in Analysis Area 2 of up to 10 people. We, therefore, assume an average group size of 5 people and an average duration of stay for day use visitors of 2.5 hours. Based on our anecdotal observations during the onsite assessment, we assume that approximately half of all people in Analysis Area 1 at any one time are recreating on the non-motorized trail and approximately half are recreating at dispersed day use sites on the river. We assume approximately half of all day use recreation users in Analysis Area

2 at any one time are recreating in the developed area at Frenchman's Flat and half are recreating at dispersed day use sites on the river.

Using the assumptions outlined above, numeric user capacities for day use and overnight use in Analysis Area 1 and Analysis Area 2 are estimated as follows:

Numeric user capacity estimates

Day use
Analysis Area 1: 8 dispersed day use recreation sites X 3 people per site X 4 groups per 12-hour visitor use day / 50% of all recreation use in the analysis area per day = 200 people per day (rounded due to degree of precision of the analysis)

Analysis Area 2: 12 dispersed day use recreation sites X 5 people per site X 4 groups per 12-hour visitor use day / 50% of all people in the analysis area at one time = 480 people per day

Overnight use
Analysis Area 2: 2 overnight campsites X 5 people per site = 10 people per night

PAOT thresholds

Day use
We used the same assumptions outlined above to establish numeric thresholds for PAOT. These thresholds provide a basis for monitoring and adaptive management of day use recreation in Analysis Area 1 and Analysis Area 2.

Analysis Area 1: 8 dispersed day use recreation sites X 3 people per site / 50% of all people in the analysis area at one time = 50 PAOT (rounded due to degree of precision of the analysis)

Analysis Area 2: 12 dispersed day use recreation sites X 5 people per site / 50% of all people in the analysis area at one time = 120 PAOT

Overnight use
For overnight use, we established a threshold for the number of camping groups per night in Analysis Area 2 equal to the number of sustainably designed campsites we estimate the USFS can provide in this area. This threshold is two camping groups per night.

Analysis Area 3

In the case of Analysis Area 3, the situation is different. In this area, there is very little and only isolated evidence of informal trails and at-large overnight campsites. If a network of informal (or formal) trails and dispersed recreation sites were established in Analysis Area 3, it would cause recreation-related sediment loading that could degrade water quality and free flow. In very low use environments like that in Analysis Area 3, vegetation and soil disturbance from recreation use can be prevented by effectively managing the amount of visitor use to remain very low[3]. As such, the limiting factor for recreational use in Analysis Area 3 of Piru Creek WSR is the number of people that can be

[3] Maintaining low public use and access in Analysis Area 3 would also help preserve and enhance habitat quality for the native rainbow trout and other species, aiming to support the reintroduction of Southern California steelhead trout into Piru Creek WSR.

accommodated per year without causing a network of visitor-created informal trails and bare ground disturbances from dispersed day use and overnight use[4].

Results of the onsite assessment of visitor-created informal trails and at-large recreation sites conducted as part of this project suggest current levels of use in Analysis Area 3 are suitable. However, the results of the assessment suggest that if use were to increase, there is risk that the few and isolated instances of visitor-created informal trails and at-large recreation sites could expand into a network of recreation-related ground disturbance. As such, the USFS estimates that maintaining existing levels of recreation use will not degrade river values, but that increases from current use levels could cause degradation.

Data regarding current recreation use levels in Analysis Area 3 are limited to the uncalibrated trail counter data we collected as part of this project. These data suggest that during the warmer months of the year when recreation use occurs in Analysis Area 3[5], the median number of people per day in Analysis Area 3 is five on weekend days and holidays and three on weekdays. As noted, there is little recreation use in Analysis Area 3 during the colder months of the year from October through May, with the exception of some whitewater boating use, most of which does not involve the use or creation of formal or informal trails. There are a total of 39 weekend days and holidays and 83 weekdays in the year from June 1 through September 30. As such, the numeric user capacity for Analysis Area 3 is estimated as:

Numeric user capacity estimate

Analysis Area 3: 39 weekend days and holidays X 5 people per day + 83 weekdays X 3 people per day = 450 people per year (rounded due to degree of precision of the analysis)

PAOT thresholds

We used the trail and traffic counter data collected as part of this project to estimate mean hourly PAOT in Analysis Area 3 during the peak summer season. The results of this analysis suggest that under current recreation use conditions during the peak summer season, mean hourly PAOT peaks at five people in Analysis Area 3. This result provides a basis to establish a numeric threshold of five PAOT in Analysis Area 3. This threshold provides a basis for monitoring and adaptive management of recreation use in Analysis Area 3, as outlined in the next section.

Summary

Table 5 summarizes the approach and rationale we used for estimating user capacities for each of the three analysis areas for Piru Creek WSR and the corresponding numeric user capacity estimates. The numeric user capacities for Piru Creek WSR are estimates based on best available data and professional management judgement. It will be important for the USFS to continue to re-evaluate and adjust user capacity estimates for this area as new information becomes available. As part of this, the USFS will monitor key indicators of recreation use and user capacities and implement adaptive management actions, as needed. The recreation use monitoring indicators, thresholds, triggers, and adaptive management strategies for Piru Creek WSR are presented in the next section.

[4] Kayaking use during high creek flows is unlikely to create any measurable visitor impacts and is not considered to degrade river values.

[5] We assume warmer months are those months of the year when average monthly daily high temperature in Los Angeles County is 70 degrees Fahrenheit or higher based on data from the National Oceanic and Atmospheric Administration.

Table 5. Basis for numeric capacity estimates, by analysis area.

Analysis Area	Basis for numeric capacity estimate	Rationale	User capacity estimate
Day Use Analysis Area 1 and Analysis Area 2	▪ Capacity is estimated as the maximum number of visitors that can be accommodated in Analysis Area 1 per day without unacceptable crowding.	▪ Crowding may cause visitors to further disperse, which would increase informal trails and dispersed recreation sites. This would increase sediment loading and degrade water quality and free flow.	▪ Analysis Area 1: 200 people per day ▪ Analysis Area 2: 480 people per day
Overnight Use Analysis Area 2	▪ Capacity is estimated as the maximum number of visitors that can be accommodated in Analysis Area 2 per night without campsite crowding.	▪ Campsite crowding may cause visitors to pioneer dispersed campsites, which would increase the amount of bare ground. This would increase sediment loading and degrade water quality and free flow.	▪ 10 people per night
Total Use Analysis Area 3	▪ Capacity is estimated as the maximum number of visitors that can be accommodated per year without causing a network of visitor-created informal trails or bare ground disturbance from dispersed day use or camping sites.	▪ If a network of visitor-created informal trails or dispersed sites are established in Analysis Area 3, it would cause sediment loading and degrade water quality and free flow.	▪ 450 people per year

Monitoring, Triggers, and Management Actions

This section outlines monitoring indicators, thresholds, triggers, and adaptive management strategies for monitoring and adaptively management recreation use and user capacities for Piru Creek WSR. The indicators and their monitoring locations, methods, and rationale are summarized in Table 6. The indicators include two social indicators and four resource indicators. The social indicators are: 1) PAOT in each of the three analysis areas; and 2) number of overnight camping groups per night in Analysis Area 2. The resource indicators apply to each of the three analysis areas and are 1) aggregate length of visitor-created informal trails; 2) aggregate areal extent of visitor-created at-large day use and overnight camping sites; 3) number of visitor-created rock dams in the river; and 4) number of instances of improperly disposed human waste. The thresholds, triggers, and adaptive management strategies for each indicator are presented below.

Table 6. Piru Creek WSR monitoring indicators.

Indicator	Monitoring locations	Monitoring method	Rationale
Number of people at one time (PAOT).	▪ Analysis Area 1 ▪ Analysis Area 2 ▪ Analysis Area 3	▪ Estimate based on trail, traffic, or parking counts or measure directly using monitoring patrols.	▪ Basis to monitor recreation-related impacts to water quality and free flow caused by visitors pioneering informal trails and dispersed recreation sites to avoid crowding and/or due to increasing use.
Number of camping groups per night.	▪ Analysis Area 2	▪ Estimate based on trail, traffic, or parking counts or measure directly using monitoring patrols.	▪ Basis to monitor recreation-related impacts to water quality and free flow caused by visitors pioneering informal trails and dispersed recreation sites to avoid campsite crowding.
Number and aggregate length of visitor-created informal trails.	▪ Analysis Area 1 ▪ Analysis Area 2 ▪ Analysis Area 3	▪ Measure directly using recreation ecology protocols.	▪ Basis to monitor recreation-related impacts to water quality and free flow due to bare ground disturbance.
Number and aggregate areal extent of visitor-created at-large day use and camping sites.	▪ Analysis Area 1 ▪ Analysis Area 2 ▪ Analysis Area 3	▪ Measure directly using recreation ecology protocols.	▪ Basis to monitor recreation-related impacts to water quality and free flow due to bare ground disturbance.
Number of visitor-created rock dams in the river.	▪ Analysis Area 1 ▪ Analysis Area 2	▪ Measure directly using monitoring patrols.	▪ Basis to monitor recreation-related impacts to free-flowing river conditions due to channel disturbance.
Number of instances of improperly disposed human waste	▪ Analysis Area 1 ▪ Analysis Area 2	▪ Measure directly using monitoring patrols.	▪ Basis to monitor recreation-related impacts to water quality due to contaminants.

Social indicator: People-at-one-time (PAOT) in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Methods to estimate numeric thresholds for PAOT, by analysis area, were presented in the previous section. These thresholds are included in Table 7, along with triggers designed to provide early warning signs before conditions reach or exceed thresholds. Table 7 also includes adaptive management actions that should be taken if triggers or thresholds are reached. In the first year of implementing the plan, PAOT should be monitored in each analysis area using one or a combination

of methods listed in Table 6. Monitoring of PAOT should then be repeated every three years, unless a trigger is reached, and action is taken to increase the monitoring frequency.

Table 7. Thresholds, triggers and management actions for people-at-one-time (PAOT) in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
Trigger 1 ▪ Analysis Area 1: Greater than 50 PAOT on one to two out of ten monitoring days ▪ Analysis Area 2: Greater than 120 PAOT on one to two out of ten monitoring days ▪ Analysis Area 3: Greater than 5 PAOT on one to two out of ten monitoring days	▪ Monitor PAOT annually for the next two years. ▪ Develop and implement a public information effort about the desired conditions for Piru Creek WSR, and efforts the USFS is taking to achieve those conditions and how visitors can best experience the river. This information can be distributed through direct visitor contact, USFS publications, maps, social media, websites, and partners. ▪ Inform visitors when use levels are expected to be high and advise on times when visitation is expected to be lower. Inform visitors about nearby alternate recreation opportunities. Educate visitors on low-impact behaviors.	▪ To ensure that river values are protected, managers would immediately address early indications of use levels that approach thresholds. More frequent monitoring of PAOT will allow managers to identify changes in use levels/patterns and take appropriate actions. ▪ The goal of management actions such as public information and outreach would be to have visitors self-disperse to other destinations or to Piru Creek WSR during low-use periods of the day or season. This would help to accommodate visitation by reducing the concentration of use during peak periods. This information would also improve visitors' knowledge about how to protect river values.
Trigger 2 ▪ Analysis Area 1: Greater than 50 PAOT on three to four out of ten monitoring days ▪ Analysis Area 2: Greater than 120 PAOT on three to four out of ten monitoring days ▪ Analysis Area 3: Greater than 5 PAOT on three to four out of ten monitoring days	▪ Monitor PAOT annually for the next two years. ▪ Increase USFS staff at Frenchman's Flat during peak periods of use to provide information to visitors about less-crowded, substitute recreation opportunities in the area. ▪ Discuss options with the County to discourage roadside parking during peak periods to protect river values.	▪ The onsite presence of USFS staff will help to reinforce messages about alternative recreation opportunities in the area and strategies to avoid and mitigate crowding in Piru Creek WSR. ▪ Limiting roadside parking would help to manage the number of people at one time visiting Piru Creek WSR and reduce crowding impacts during peak periods.
Threshold ▪ Analysis Area 1: Greater than 50 PAOT on five or more out of ten monitoring days	▪ Work with the County to discourage roadside parking during peak periods to protect river values. ▪ If needed, evaluate the feasibility of implementing a daily reservation system to visit Piru Creek WSR to	▪ If needed and administratively feasible, a reservation system would further manage the level of visitor use and distribute visitor use across days of the week.

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
▪ Analysis Area 2: Greater than 120 PAOT on five or more out of ten monitoring days ▪ Analysis Area 3: Greater than 5 PAOT on five or more out of ten monitoring days	spread use to off-peak days and manage use on peak days.	

Social indicator: Number of camping groups per night in Analysis Area 2

Methods to estimate a numeric threshold for the number of camping groups per night in Analysis Area 2 were presented in the previous section. This threshold is included in Table 8, along with a trigger designed to provide an early warning sign before conditions reach or exceed threshold conditions. Table 8 also includes adaptive management actions that should be taking if the trigger or threshold are reached. In the first year of implementing the plan, the number of camping groups per night should be monitored in Analysis Area 2 using one or a combination of methods listed in Table 6. Monitoring of the number of camping groups per night should then be repeated every three years, unless a trigger is reached, and action is taken to increase the monitoring frequency.

Table 8. Thresholds, triggers and management actions for number of camping groups per night in Analysis Area 2

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
Trigger 1 ▪ Analysis Area 2: Greater than 2 camping groups per night on one out of ten monitoring days	▪ Monitor the number of camping groups per night annually for the next two years. ▪ Use site management techniques to clearly define campsite boundaries and prevent campsite expansion. ▪ Use information, signage, and enforcement to keep visitors from camping outside of existing campsites. ▪ Provide information to visitors to encourage them to avoid visiting during peak use periods and to consider alternate recreation and camping opportunities. ▪ Actively rehabilitate and discourage use of areas where signs of new dispersed campsites start to form.	▪ To ensure that river values are protected, managers would immediately address early indications of increases in overnight camping use. More frequent monitoring of overnight camping use will allow managers to identify changes in use levels/patterns and take appropriate actions. ▪ Educational and informational signage will help inform visitors about low-impact camping practices that concentrate use within the designed footprint of campsites and how they can help protect river values more generally. Onsite monitoring and contact with visitors will provide additional assurance that camping use occurs within existing campsite footprints, as needed. ▪ Education and outreach to visitors will be designed to encourage visitors to self-

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
		disperse to other recreation destinations that are experiencing less visitation pressure or to Piru Creek WSR during low-use periods of the day or season. ▪ Rehabilitation in areas where signs of new informal campsites begin to form will discourage formalization of those new campsites and help prevent increases in the overall camping footprint.
Threshold ▪ Analysis Area 2: Greater than 2 camping groups per night on two or more out of ten monitoring days	▪ Increase USFS staff presence to manage the number of camping groups per night and to direct overflow groups to other camping opportunities in the region. ▪ If needed, evaluate the feasibility of implementing a mandatory campsite reservation system to camp overnight at Piru Creek WSR to spread use to off-peak days and manage use on peak days.	▪ The onsite presence of USFS staff will help to reinforce messages about low-impact camping practices and about alternative camping opportunities in the area. ▪ If needed and feasible, a campsite reservation system would further manage the level of visitor use and distribute visitor use across days of the week.

Resource indicator: Aggregate length of visitor-created informal side-trails in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Thresholds and management triggers for the aggregate length of visitor-created informal side-trails are presented in Table 9, along with adaptive management actions that should be taken if the triggers or thresholds are reached. A survey of this indicator's resource condition should be conducted by the end of the third year of implementing the plan using methods developed by Marion (2024) and delivered to USFS in a companion document. Monitoring should then be repeated every three to five years, unless a trigger is reached, and action is taken to increase the monitoring frequency. The triggers and thresholds specify the limits of the aggregate lineal feet of informal side-trails created by visitors beyond which adaptive management actions should be taken to protect river values and water quality.

Table 9. Triggers, thresholds, and management actions for the aggregate length of visitor-created informal side-trails[1] in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
Trigger 1 ▪ Analysis Area 1: Aggregate length of visitor-created informal trails will not exceed 500 ft. ▪ Analysis Area 2: Aggregate length of visitor-created	▪ Rehabilitate the most non-sustainable and unnecessary informal access trails and discourage their use, particularly visitor-created informal side-trails with steep grades and/or fall-line alignments most prone to soil displacement and erosion.	▪ To ensure that river values are protected, managers would immediately address early indications of resource conditions that exceed triggers. Additional monitoring may be necessary to inform the adaptive management

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
informal trails will not exceed 800 ft. ▪ Analysis Area 3: Aggregate length of visitor-created informal trails will not exceed 35 ft.	▪ If and where needed and where possible, provide new sustainable side-hill access trails with low grades, gravel, and/or rock steps. ▪ Encourage visitors to use the new trails to ensure visitor safety and resource protection.	process and the selection of appropriate actions. ▪ The goal of management actions is to shift use to more sustainable trail alignments that yield less erosion and sediments to the Piru Creek WSR.
Trigger 2 ▪ Analysis Area 1: Aggregate length of visitor-created informal trails will not exceed 750 ft. ▪ Analysis Area 2: Aggregate length of visitor-created informal trails will not exceed 1,000 ft. ▪ Analysis Area 3: Aggregate length of visitor-created informal trails will not exceed 40 ft.	▪ Enhance and expand efforts to rehabilitate non-sustainable and unnecessary visitor-created informal access trails and discourage their use. ▪ Where possible, provide new sustainable side-hill access trails with low grades, gravel, and/or rock steps. Initiate a trail maintenance program to increase the efficacy of drainage on all informal trails. ▪ Encourage visitors to use the new trails to ensure visitor safety and resource protection. Include educational signage with site maps if needed.	▪ Creating and maintaining an infrastructure of sustainable trails that access the locations desired by visitors while avoiding the habitats of sensitive species allows for appropriate recreational access while addressing the associated resource impacts. ▪ Formal trails should be sustainably designed (side-hill alignments with low grades, e.g., <10% trail grade unless armored with rockwork) to accommodate use with minimal impact.
Threshold ▪ Analysis Area 1: Aggregate length of visitor-created informal trails will not exceed 1,000 ft. ▪ Analysis Area 2: Aggregate length of visitor-created informal trails will not exceed 2,500 ft. ▪ Analysis Area 3: Aggregate length of visitor-created informal trails will not exceed 50 ft.	▪ Further enhance and expand efforts to rehabilitate non-sustainable and unnecessary visitor-created informal access trails and discourage their use. ▪ Where possible, provide additional numbers of new sustainable side-hill access trails with low grades, gravel, and/or rock steps. Expand a trail maintenance program to increase the efficacy of drainage on all informal trails. ▪ Encourage visitors to use the new trails to ensure visitor safety and resource protection. Include prompter signs and educational signage with site maps where needed.	▪ Creating and maintaining an infrastructure of sustainable trails that access the locations desired by visitors while avoiding the habitats of sensitive species allows for appropriate recreational access while addressing the associated resource impacts. ▪ Formal trails should be sustainably designed (side-hill alignments with low grades, e.g., <10% trail grade unless armored with rockwork) to accommodate use with minimal impact.

[1] The indicator is specifically for visitor-created informal side-trails. The main informal trails providing visitor access to each analysis area are viewed as essential and not degrading river values. Where possible, USFS should formalize these main informal trails to ensure their long-term sustainability and as part of an overall strategy to channel visitor use onto durable trail and recreation site surfaces at noted in the table.

Resource indicator: Aggregate areal extent of visitor-created day-use and overnight recreation sites in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Thresholds and management triggers for the aggregate areal extent of visitor-created day use and overnight recreation sites are presented in Table 10, along with adaptive management actions that

should be taken if the triggers or thresholds are reached. A survey of this resource indicator's condition should be conducted by the end of the third year of implementing the plan using methods developed by Marion (2024) and delivered to USFS in a companion document. Monitoring should then be repeated every three to five years, unless a trigger is reached, and action is taken to increase the monitoring frequency. The triggers and thresholds specify the limit of the aggregate areal extent of visitor-created day use and overnight recreation sites beyond which adaptive management actions should be taken to protect river values and water quality.

Table 10. Triggers, thresholds, and management actions for the aggregate areal extent of visitor-created day use and overnight recreation sites in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
Trigger 1 ▪ Analysis Area 1: Aggregate areal extent of visitor-created day use and overnight recreation sites will not exceed 3,000 ft^2. ▪ Analysis Area 2: Aggregate areal extent of visitor-created day use and overnight recreation sites will not exceed 6,000 ft^2. ▪ Analysis Area 3: Aggregate areal extent of visitor-created day use and overnight recreation sites will not exceed 2,100 ft^2.	▪ Evaluate and retain the most sustainable day use and overnight recreation sites – those that are expansion-resistant due to surrounding sloped or rocky terrain. Where possible, restore expansion-prone recreation and camping sites in flatter terrain and those in the best habitat of rare species by partially burying (ice-berging) very large rocks and posting site closure signs. ▪ Where possible, use large, embedded rocks to create recreation and campsite borders that limit their sizes and discourage site expansion over time. ▪ Inform visitors to limit recreation site creation and/or expansion to protect natural resources. Educate visitors on Leave No Trace low impact day-use and camping practices.	▪ To ensure that river values are protected, managers would immediately address early indications of resource conditions that exceed triggers. Additional monitoring may be necessary to inform the adaptive management process and the selection of appropriate actions. ▪ The goal of management actions is to shift use to more sustainable recreation site locations that yield less erosion and sediments to the Piru Creek WSR.
Trigger 2 ▪ Analysis Area 1: Aggregate areal extent of visitor-created day use and overnight recreation sites will not exceed 4,000 ft^2. ▪ Analysis Area 2: Aggregate areal extent of visitor-created day use and overnight recreation sites will not exceed 8,000 ft^2. ▪ Analysis Area 3: Aggregate areal	▪ Enhance management efforts to evaluate and retain the most sustainable day use and overnight recreation sites – those that are expansion-resistant due to surrounding sloped or rocky terrain. Where possible, restore expansion-prone recreation and camping sites in flatter terrain and those in the best habitat of rare species by partially burying (ice-berging) very large rocks and posting site closure signs. ▪ Expand the use of large, embedded rocks to create recreation and campsite borders that limit their sizes and	▪ Site management actions pertaining to the number and location of sustainable recreation sites and campsites should be able to effectively constrain their number and sizes, along with persuasive educational low impact messages. The focus of these efforts is to restrict visitor activity to a limited number of small, expansion-resistant recreation sites and campsites, i.e., to spatially concentrate the areal extent of visitor use activities.

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
extent of visitor-created day use and overnight recreation sites will not exceed 3,000 ft^2.	discourage site expansion over time. ▪ Where possible, expand efforts to inform visitors of their need to limit recreation site creation and/or expansion to protect natural resources. Educate visitors on Leave No Trace low impact day-use and camping practices.	
Threshold ▪ Analysis Area 1: Aggregate areal extent of visitor-created day-use and overnight recreation sites will not exceed 6,000 ft^2. ▪ Analysis Area 2: Aggregate areal extent of visitor-created day-use and overnight recreation sites will not exceed 10,000 ft^2. ▪ Analysis Area 3: Aggregate areal extent of visitor-created day-use and overnight recreation sites will not exceed 4,000 ft^2.	▪ Intensify efforts above where possible, including restoration of non-sustainable and unnecessary recreation sites and campsites and visitor numbers as needed. ▪ Consider shifting to a visitor impact containment policy whereby visitors are required to use only management-specified designated day use recreation sites and/or overnight campsites. These can be available on a first-come, first-served basis or incorporated into a reservation system with appropriate enforcement measures. ▪ Campsites can be set back from shorelines to protect water quality. Constructed side-hill campsites are also a possibility to limit site expansion by the more steeply sloped surrounding terrain (see Marion et al. 2023). ▪ Where possible, restore the visitor-created day use recreation sites and campsites. Ruin them by placing large rocks and felled trees across them.	▪ More intensified efforts to enhance the sustainability of existing visitor-created day use and overnight recreation sites or the development of a formal infrastructure of sustainable recreation sites and campsites will more effectively prevent unnecessary site expansion or proliferation. Ensure that all actions meet the desires and needs of visitors while concentrating their activities on a limited sustainable set of recreation sites. ▪ Constructed side-hill sites in sloping terrain offer the most optimal trade-off between providing recreation sites or campsites in locations desired by visitors while avoiding site expansion. ▪ Permitting restrictions on the number of campsites, recreation sites, and ultimately visitors may be needed to restrict the aggregate amount of visitor impact.

Resource indicator: Number of visitor-created rock dams in Piru Creek in Analysis Area 1, Analysis Area 2, and Analysis Area 3

The Wild and Scenic River Act prohibits the construction of dams and protects these rivers from other human-caused damage that could impede their flow, including bank and channel alterations such as visitor-created dams to create pools for swimming. Therefore, the required resource condition for this resource indicator is zero visitor-created dams and no triggers are included (Table 11). A survey of this resource indicator's condition should be conducted by the end of the third year of implementing the plan using methods developed by Marion (2024) and delivered to USFS in a companion document. Monitoring should then be repeated every three to five years, unless the threshold is reached, and action is taken to increase the monitoring frequency.

Table 11. Thresholds and management actions for the number of visitor-created rock dams in Piru Creek in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
Threshold ▪ Analysis Area 1: Number of visitor-created rock dams in Piru Creek will not exceed 0. ▪ Analysis Area 2: Number of visitor-created rock dams in Piru Creek will not exceed 0. ▪ Analysis Area 3: Number of visitor-created rock dams in Piru Creek will not exceed 0.	▪ Any visitor-created dams, often assembled by visitors to create pools for wading/swimming or to walk across should be immediately deconstructed. ▪ Visitor information and education is needed to convey to visitors that Piru Creek is federally designated as a Wild and Scenic River and that the legislation strictly prohibits the construction of any dams that alter nature water flows and depths. ▪ If dams are frequently created despite educational efforts law enforcement actions may be needed, most likely in Analysis Area 2.	▪ Allowing even a single visitor-created dam to remain signifies that building rock structures is an acceptable practice. A higher frequency of monitoring may be necessary to more rapidly find and remove dams to protect the free-flowing waters of Piru Creek.

Resource indicator: Number of instances of improperly disposed human waste in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Toilets are provided in Analysis Area 2 and the cat-hole method for burying human waste is promoted in Analysis Areas 1 and 3. Therefore non-buried (surface-disposed) human waste is unacceptable and may threaten the water quality of Piru Creek WSR. Thresholds and triggers for the number of instances of improperly disposed human waste are presented in Table 12, along with adaptive management actions that should be taken if the triggers or thresholds are reached. A survey of this resource indicator's condition should be conducted by the end of the third year of implementing the plan using methods developed by Marion (2024) and delivered to USFS in a companion document. Monitoring should then be repeated every three to five years, unless a trigger is reached, and action is taken to increase the monitoring frequency. The triggers and thresholds specify the limit of the number of improperly disposed human waste sites beyond which adaptive management actions should be taken to protect river values and water quality.

Table 12. Triggers, thresholds, and management actions for the number of instances of improperly disposed human waste in Analysis Area 1, Analysis Area 2, and Analysis Area 3

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
Trigger 1 ▪ Analysis Area 1: Number of instances of improperly disposed human waste will not exceed 2. ▪ Analysis Area 2: Number of instances of improperly	▪ Expand and enhance visitor information and education messaging and signs to convey the locations of formal toilets and that visitors should employ the cat-hole method in all areas distant from the toilets. This information needs to: 1) clearly communicate that surface disposal of human waste is strictly prohibited, and 2) describe the approved Leave No	▪ To ensure that river values are protected, managers would immediately address early indications of resource conditions that exceed triggers. Additional monitoring may be necessary to inform the adaptive management process and the selection of appropriate actions.

Thresholds and triggers	Adaptive management actions	Rationale for adaptive management action
disposed human waste will not exceed 3. ▪ Analysis Area 3: Number of instances of improperly disposed human waste will not exceed 1.	Trace practices for digging and using the cat-hole method of human waste disposal (Marion 2014).	▪ The goal of management actions is to encourage the use of public toilets or the accepted cat-hole method of human waste disposal to protect the water quality of Piru Creek WSR.
Trigger 2 ▪ Analysis Area 1: Number of instances of improperly disposed human waste will not exceed 3. ▪ Analysis Area 2: Number of instances of improperly disposed human waste will not exceed 4. ▪ Analysis Area 3: Number of instances of improperly disposed human waste will not exceed 2.	▪ Intensify the educational efforts included above and ensure that they are presented in the native languages of the visiting population. Consider adding another toilet in Analysis Area 1, if possible.	▪ To ensure that river values are protected, managers would immediately address early indications of resource conditions that exceed triggers. Additional monitoring may be necessary to inform the adaptive management process and the selection of appropriate actions. ▪ The goal of management actions is to encourage the use of public toilets or the accepted cat-hole method of human waste disposal to protect the water quality of Piru Creek WSR.
Threshold ▪ Analysis Area 1: Number of instances of improperly disposed human waste will not exceed 4. ▪ Analysis Area 2: Number of instances of improperly disposed human waste will not exceed 5. ▪ Analysis Area 3: Number of instances of improperly disposed human waste will not exceed 3.	▪ Further intensify educational efforts with personally delivered messaging during higher use periods. Increase the intensity of monitoring and remediation efforts. ▪ Consider adding additional toilets. For Analysis Area 3 consider a Pack Out program for human waste that employs Wag bags.	▪ To ensure that river values are protected, managers would immediately address early indications of resource conditions that exceed triggers. Additional monitoring may be necessary to inform the adaptive management process and the selection of appropriate actions. ▪ The goal of management actions is to encourage the use of public toilets or the accepted cat-hole method of human waste disposal to protect the water quality of Piru Creek WSR.

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Appendix A — Recreation Site Assessment Methods

Recreation Site Assessment Objectives and Methods

This inventory was conducted from 5/11-13 in 2024 by Dr. Jeff Marion for Catamount Consulting and the U.S. Forest Service. The objective was to inventory and summarize all recreation-related resource impacts within each of the three analysis areas for Piru Creek WSR, including visitor-created informal trails, day use recreation sites, overnight campsites, and three formal picnic sites. There are no formal trails or other formal recreation sites within Piru Creek WSR.

Analysis Area 1 was walked upstream along Piru Creek 0.3 mi to this location (GPS N34.62561° W118.74349°), where there was no further evidence of visitor traffic (both creek sides were checked). The east side of the Golden State Hwy was then carefully searched to locate and record all informal trails heading east. The downstream and upstream areas at each informal trail location were additionally searched for recreation sites and informal trails. Analysis Area 2 was searched along both the Piru Creek corridor and the Golden State Hwy corridor to locate informal trails and recreation sites. Analysis Area 3 was walked downstream searching both sides for informal trails and sites. An informal trail extended 1.35 downstream with the last 0.5 mi of trail discontinuous before fading out completely at N34.61196° W118.76846°. An additional 0.35 miles of river corridor was also searched but not a single footprint was found at any location, so the search was discontinued.

Main informal trails were identified and followed to document where they became discontinuous and then ended (see Table 13). Thirty-two informal side-trails were also located and assessed. The length of each informal trail was assessed using a TruPulse Distance Measuring Laser device. A tape measure was used to measure trail widths and incision but estimates of mean width and incision for each informal trail were recorded so that informal trail area (informal trail length x mean width) and soil loss (informal trail area x mean incision) could be estimated (Table 13).

Twenty-two recreation sites were found and assessed, including three formal picnic sites, three overnight campsites, and 16 visitor-created day-use sites (Table 13). Professional judgement was applied to determine the “predominant” use of the visitor-created recreation sites (i.e., day use or overnight camping use). The dimensions of all recreation sites were measured with a TruPulse Distance Measuring Laser device to calculate their individual sizes (area of intensive visitor-related vegetation and soil disturbance). Vegetation and exposed soil cover were estimated within recreation site boundaries and within an adjacent offsite undisturbed control “reference” area selected to depict conditions on the site had it never been created. Cover was estimated using six categories, but mid-point values (in bold) were recorded and used in all analyses: 05% (**2.5**), 6-25% (**15.5**), 2650% (**38**), 5175% (**63**), 7695% (**85.5**), 96100% (**98**). An estimate of the percentage of vegetation cover lost on each site was calculated by subtracting on-site from off-site mid-point values. This value was multiplied by site size to obtain an estimated area over which vegetation has been lost on each site. Similarly, onsite soil exposure was subtracted from offsite soil exposure (mid-point values) to obtain an estimate of the percent increase in soil exposure that has occurred on recreation sites. This value was multiplied by site size to estimate the area over which soil exposure has increased on each site compared to control site conditions. Data are presented in Table 13.

The measurement variables assessed, their field protocols, and field form are presented in a separate document for reference and application during future surveys. All data were entered into two Excel spreadsheets which were provided to USFS separately, along with all digital photos taken of the informal trails and recreation sites. The photo names were labelled with the unique site numbers used in the Excel file and linked by including their original filenames in an additional column. A sub-meter accuracy GPS unit was not available, so a Garmin GPS Map 64 device (accuracy ± 10-15 ft) was used to record Waypoint locations of all inventoried features, also copied into the Excel

spreadsheets. Though not necessary, future surveys could incorporate the use of a sub-meter GPS device so that the main and side informal trails can be individually mapped. This would slightly increase the accuracy of the trail data in Table 13.

Table 13. Summary data for selected informal trail and recreation site measurements.

Indicators	Analysis Area 1 (1.7 mi long)	Analysis Area 2 (1.1 mi long)	Analysis Area 3 (4.5 mi long)
Informal Main Trail[1]			
% of Analysis Area Length	17.6	100	30
Informal Side-Trails			
Number	10	21	1
Aggregate Length (ft)	899	1888	30
Aggregate Area (ft^2)	1769	5310	45
Aggregate Soil Loss Vol. (ft^3)	419	1313	7
Formal Picnic Sites			
Number	0	3	0
Aggregate Area (ft^2)	0	4656	0
Mean Site Size (ft^2)	0	1552	0
Day Use Recreation Sites			
Number	6	10	0
Aggregate Area (ft^2)	4019	7701	0
Mean Site Size (ft^2)	670	770	0
Mean Vegetation Loss (%)	42	80	0
Agg. Area of Veg. Loss (ft^2)	2490	6529	0
Mean Soil Exposure (%)	26	74	0
Agg. Area of Soil Exp. (ft^2)	2122	6114	0
Overnight Campsites			
Number	0	1	2
Aggregate Area (ft^2)	0	345	2050
Mean Site Size (ft^2)	0	345	1025
Mean Vegetation Loss (%)	0	60	52
Agg. Area of Veg. Loss (ft^2)	0	207	851
Mean Soil Exposure (%)	0	60	53
Agg. Area of Soil Exp. (ft^2)	0	209	854

[1] A single informal main trail on the south side of Piru Creek was found in Area 1 extending 0.3 mi upstream before ending at N34.62561° W118.74349°. There was a mostly continuous main trail on the south side of Piru Creek within Area 2, discontinuous in a few spots due to rocky areas and dense grasses. A single main trail mostly on the south side of Piru Creek was found in Area 3 extending 1.35 mi with the last 0.5 mi of trail discontinuous before fading out completely at N34.61196° W118.76846°.

Observations and Recommendations Regarding Future Recreation Site Assessments

The measurement variables and protocols developed prior to fieldwork were slightly adapted as fieldwork proceeded and have been revised post-fieldwork to guide future surveys. One caution regarding surveys in Analysis Areas 1 and 3 is that cross-country hiking both on and off informal trails can be both challenging and potentially dangerous. There is a fair amount of scrambling over rocks and boulders and some "climbing" with hands, though for experienced hikers ropes are unnecessary. There are locations where fording Piru Creek is necessary. During normal water flows these are safe, provided staff spend reasonable time locating the best crossing points (a trekking pole is handy). In Analysis Area 3, there are extremely slippery clay soils, poison oak in some places, and rattlesnakes, requiring careful attention to where your feet are placed (particularly when the ground vegetation is thick and tall). Analysis Area 3 is sufficiently remote and challenging that it should be assessed with a minimum of two surveyors carrying an emergency beacon device and plans to initiate a search if they don't emerge on time. If both carry large backpacks, they could also remove all the trash they encounter.